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Contractors and Engineers

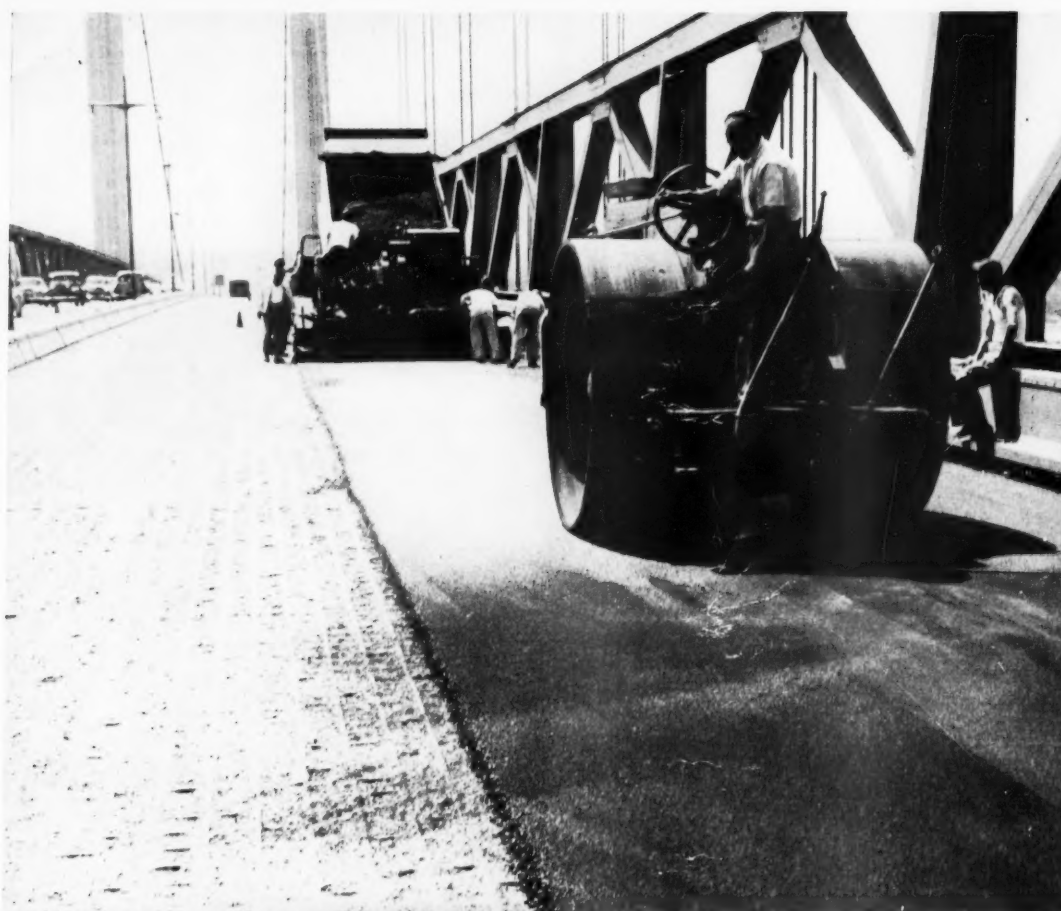
magazine of modern construction

SEPTEMBER 1954



A precast concrete panel is set in place by a Bay City crane as the roof of the new jet hangar at the Oceana Naval Air Station in Virginia takes shape. The lateral arches, to which panels are welded, are also precast.

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Laying hot-mix Texaco Asphaltic Concrete pavement on New York City's Bronx-Whitestone Bridge, which is under jurisdiction of Triborough Bridge & Tunnel Authority.



Asphalt contractor—Standard Bitulithic Company, Mount Vernon, N.Y.

Asphalt consultant for Triborough Bridge & Tunnel Authority—E. D. Sabin



Close-up of exposed steel grid in bridge floor and the new Texaco Asphaltic Concrete wearing surface.



Spreading seal coat of asphalt-treated stone dust while the asphalt pavement was being rolled.

Traffic will average 75,000 vehicles a day on this resilient Texaco Asphalt pavement

The Bronx-Whitestone Bridge links two of New York City's five boroughs, Bronx and Queens. More than 23,800,000 vehicles crossed the bridge last year, a daily average of 65,000, with a 24-hour peak of 114,000 cars and trucks.

During July of this year, a hot-mix Texaco Asphaltic Concrete wearing surface was constructed on this bridge. Careful planning of working hours resulted in a minimum of inconvenience to traffic. Prior to laying the new asphalt surface, the existing pavement was chipped off down to the steel grid in the bridge floor, as shown by the photos. The resilient asphaltic concrete surface was then laid to a compacted thickness of 1½ inches.

It was essential that the new pavement be opened to traffic immediately after it had been rolled. Application of a seal coat of asphalt-coated stone dust during the rolling operation eliminated any tackiness.

The answer to your own paving problem may be a heavy-duty pavement of the hot-mix Texaco Asphaltic Concrete type, or it may be one of the low-cost Texaco Asphalt surfaces designed for secondary roads and streets. Texaco Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils offer the road builder a variety of answers to the paving problem. Helpful information regarding all of these types is supplied in two booklets which you can obtain without obligation by writing our nearest office.

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TEXACO ASPHALT

Contractors and Engineers

magazine of modern construction

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Associate Editor, Catherine J. Hearn
Assistant Editors, William J. Dowdell, William T. Darden

Publisher, Donald V. Buttenheim,
Contributing Editor, Ray Day
New Products Editor, Frank Kypreos
Art Director, Henry E. Sallocho

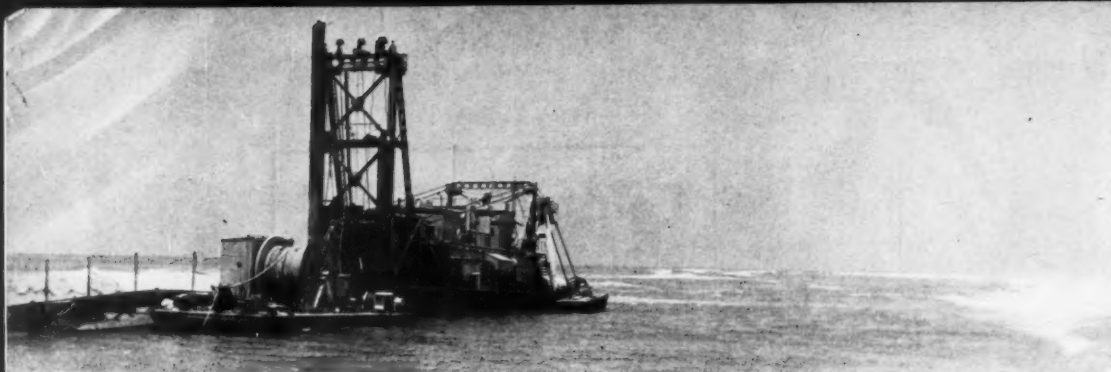
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EDITORIAL

A Case for Planning

One of the criticisms frequently directed at public-works programs is that their planning is often too detailed, too costly. Seldom heard are the more logical indictments against poor planning and resultant economic loss.

Lack of comprehensive planning at the Port Hueneme harbor on the lower California coast appears to be an example of such needless waste. Aside from the corrective work now under way at the harbor (see page 20), annual maintenance will cost almost \$500,000.

The current work is the direct result of careless planning 15 years ago. Until 1939, shoreline erosion in the Port Hueneme area was no problem. The littoral drift in the Pacific brought sand down the coastline and deposited it along the shore, replacing sand that had been washed away. Then local private interests in the vicinity of Oxnard,

Calif., believed it necessary to develop a small-craft harbor at Port Hueneme. After cursory engineering studies, a breakwater was designed and built into the open sea. Supplementary dredging and the construction of a south jetty gave Port Hueneme a good harbor. Still later, the U. S. Navy improved the harbor after a U. S. Naval Construction Battalion headquarters was located nearby.

The littoral drift was blocked by this incompletely planned work, and the flow of Pacific waters along the coast left huge deposits of sand north of the breakwater. South of the breakwater, the shore line began to fall in. Soon it was receding at a staggering rate. The Port Hueneme sewage disposal outfall was broken by the action of the ocean and, until emergency work began, the sewage plant itself stood on the brink

of a cutting beach line. Erosion began to chew into the shore line as far as Point Mugu, ten miles south.

The damage done through these years is today being repaired by the U. S. Army Corps of Engineers, which is building up the shore line with three million cubic yards of material. Dredges have begun the regular work of pumping sand accretions to the south of the harbor so that these beaches can be restored.

First contracts for restoring the beaches have drawn prices ranging from 59 to 79.8 cents per cubic yard, an extremely high price. And unless Congressional authorization is obtained for an additional five million dollars for another small-boat harbor and a sand trap up the coast, the annual restoration of the Hueneme beach will involve dredging in the open sea.

It is conceivable that the same type of hydraulic study conducted by the Navy in the case of the Lumonau reef breakwater at Apra Harbor, Guam, might have obviated the present situation at Port Hueneme. At Guam, some money was spent to set a breakwater practically atop Port Apra's coral reef, fully exposed to typhoons and the battering force of the ocean. Careful studies corrected this by pointing out the advisability of building the breakwater in deeper water behind the reef.

If adequate advance planning had not been forgotten in the Port Hueneme case, there would be no erosion problem along the coast line to the south today. Good economics dictated 15 years ago that advance planning should have been used. Neglecting to use it has meant needless cost continuing in perpetuity.

NEWS AND VIEWS

The current **trend of construction awards**—running counter to predictions made earlier in the year—makes it likely that 1954 will shatter the all-time high record made in 1953. Gains in contract volume have been getting larger through the past eight months, so that 1953 awards now hold only a 7 per cent edge over those of 1954.

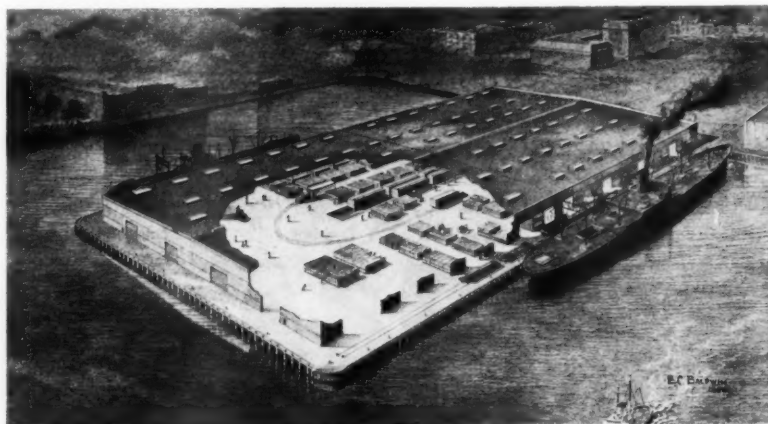
Construction work, some of it based on contracts let this year, also promises to better the 1953 volume. One of the larger jobs got under way last month as the U. S. and Canada jointly began construction of the **\$600 million hydroelectric development** in the St. Lawrence River. When complete, the project will be exceeded in capacity only by Grand Coulee Dam in Washington.

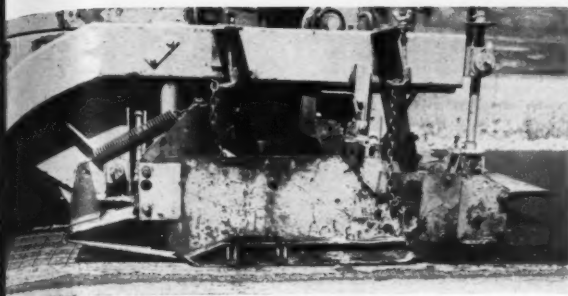
Helping to keep **activity at a high level** are public buildings, and this work is expected to increase as projects like the \$9 million Kansas State Office Building and Louisiana's \$42 million hospital and college are started. In coming months, construction work should also be heavier in sewer and water facilities, bridges, and highways.

An example of the unmistakable movement toward more road work is shown in highway expenditures in Pennsylvania. The state spent a **record total of \$71,151,000** on roads in the first seven months of 1954, to top last year's \$59,450,000 record for the same period. Continuing work is expected to make this year total outstrip the \$136,011,000 spent for road improvements in 1953.

While glancing at records, that of the New Jersey Turnpike should encourage the already booming growth of toll roads. For the latest 12-month period, the road earned a net of \$18,999,915, **an increase of almost 2½ million** over the previous period. The money came from tolls on 23,394,254 vehicles, 3½ million more than used the road in the previous 12-month period. Another noteworthy item for the record: The accident rate, 60.7 per 100 million miles in the first half of 1953, dropped to 54.6 per cent for the first half of this year.

A drawing of the \$6,300,000 Pier C, which will be the widest such facility in the port of New York. The 192,440 square-foot interior will have 1,180 feet of railroad track to expedite handling of cargo.





One leg of the V-shaped device is attached to the finisher with pin and hinge. A spring attached to bracket and conveyor screw housing exerts tension on the upper leg of the V so that fabric is held tight against the ground.

Device Prevents Reinforcing From Catching in Finisher

WORKING ON A fabric-in-asphalt job on U. S. 85-87, just 18 miles north of Colorado Springs, Colorado State Highway Department engineers hit on a new method for holding the reinforcing in place by simple finisher attachments. These attachments solve the problem of having the fabric become entangled or hooked in the finisher as asphalt is spread—a familiar problem on asphalt paving jobs using welded wire fabric reinforcement. Reinforcing used in the 4,000-square-yard project came in sheets 11½-feet wide and 8 feet long. The hot-mix surface course was 2 inches thick.

The attachments devised by department men under maintenance engineer Walter Harris consist of three component parts. The first is a ¼-inch-thick steel plate, 1 foot wide, 2 feet long, and bent into a V shape. This was attached just outside each finisher track, and immediately ahead of the conveyor screw. Pin and hinge were used to secure one leg of the V so that it was horizontal to the ground. The apex of the V pointed forward, enabling the bottom leg of the attachment to slide along the wires directly in front of the conveyor screw.

The second part was a heavy coil spring, attached between a bracket welded to the apex of the V and the conveyor-screw housing. This exerted tension on the upper leg of the plate. The torque about the hinged upper leg caused the bottom leg of the plate to exert downward pressure on the fabric. Thus, the fabric was prevented from rising and being caught in the conveyor screw.

Device Between Tracks

With these two attachments holding down the wire fabric outside the finisher tracks, a third device was developed to flatten reinforcing between the tracks as the finisher moved along. A 10-foot-long steel plate, extending between the tracks and the conveyor screw, was attached to the forward underside section of the finisher. The plate was T-shaped, and the crossbar of the T trailed along the fabric just ahead of the conveyor screw. Pressure was applied to the crossbar by a compression spring between the bar itself and the underside of the finisher, and this downward pressure prevented the steel fabric from becoming entangled in the conveyor screw.

THE END



Just outside the track of the Barber-Greene finisher, and just ahead of the conveyor screw, a steel plate bent into a V-shape holds welded wire fabric reinforcing in place for a hot-mix paving job near Colorado Springs, Colo.

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THE KIRWIN DAM, now heading for completion 13 months ahead of schedule, is not our nation's largest—but the Solomon River, which it harnesses at last, could well be America's most fiendishly treacherous dam site! But neither dust nor deluge, seepage nor high winds nor low visibility—nor 15,000-yard landslides (as shown above)—can keep these steeped-in-experience, veteran contractors from hitting their breakneck dirt-moving pace of more than a million yards a month!



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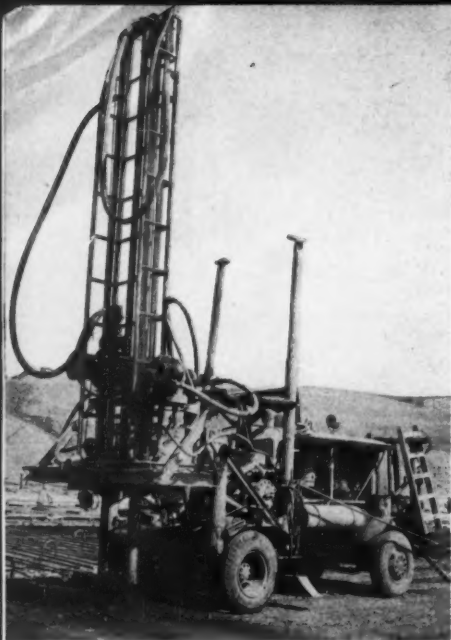
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And Remember
NOTHING ELSE
TAKES IT LIKE
3-T NYLON



Anchor holes are bored into the hill by a specially designed rig. An Ingersoll-Rand 600-cfm Gyro-Flo compressor supplies the unit with air for raising, rotating, and lowering drill shafts, as well as for propulsion and steering. C&E Staff Photos

After hooked reinforcing rods have been inserted into the anchor holes, the holes are filled with grout by a Koehring Mud-Jack. The truck-mounted bucket discharges directly to the Mud-Jack, and the grout is pumped through hoses to the holes.



Modified Highway Equipment Paves Spillway for Dam

Concrete slabs are anchored to hillside with rods set in 25,000 holes drilled into the chalk base

By RALPH MONSON, Field Editor

FORTY ACRES of reinforced-concrete paving, varying from 18 inches to 4 feet in depth, will make up the floor of the spillway chute and stilling basin of the Fort Randall Dam on the Missouri River at Pickstown, S. Dak. Started in the spring of 1952, this project, known as stage 2 of the spillway construction, is scheduled for completion by December.

The contractor for this stage is a joint venture known as Al Johnson & Associates. Participating in the venture are Western Contracting Corp., Sioux City, Iowa; Peter Kiewit Sons' Co., Omaha, Nebr.; Condon-Cunningham Co., Omaha; and Al Johnson Construction Co., Minneapolis, Minn. The main spillway structure, or stage 1, is being built by another joint venture called Johnson-Winston Contractors, which consists of Al Johnson Construction Co. and Winston Brothers Co., both of Minneapolis. The Johnson firm is the sponsoring contractor on both of these joint ventures.

Spillway excavation, part of stages 2, 3, and 4 of the earthwork, was done by Western Contracting Corp. Excavation of the downstream unlined portion of the spillway chute is now being done under the stage 5 earthwork contract with List & Clark Construction Co., Inc., Kansas City, Mo., the contractor for that portion of the project.

The spillway chute is a huge channel sliced out of the chalk hillside and lined with concrete. Through it will flow the flood waters of the Missouri under the control of the spillway structure's 21 large tainter gates. From the spillway structure, the floor of the chute slopes down at a 4 per cent grade for 1,000 feet, then breaks to a 20 per cent grade down into the stilling basin.

The sloping portions of the chute floor above the stilling basin tail-water elevation have a 3½-foot-thick sand and gravel blanket between the chalk base and the con-

crete slab. This blanket insulates the chalk against frost which might cause displacement, damaging the concrete slab. Six inches of stabilized gravel surface on the sand blanket provide a solid working platform for equipment.

Anchor Rods Drilled Into Chalk

Anchor rods penetrate through this blanket and at least 10 feet into the chalk to tie the paving slab securely to the base. The concrete walls of the stilling basin portion of the chute are also tied into the chalk walls of

the excavation by anchors. These penetrate from 22 to 32 feet into the chalk. All other chute walls are of the cantilever type.

Drilling more than 25,000 anchor holes 6 inches in diameter and with bottoms belled out to 18 inches

A Joy electric-powered coal saw cuts a vertical trench in the chalk. The wall in the background, showing marks of the saw blade, has holes for the anchor rods which will tie the concrete spillway chute to the bank.



As an air-operated 4-cubic-yard Gar-Bro bucket is picked off the semitrailer by a Manitowoc 3900 crane, a Jaeger finishing machine, a Koehring longitudinal finisher, and a crew with hand belt put final touches to the slab.



looked to Oscar McCormick, project manager, like a job for a special machine. So he designed one and had it built by Hugh Williams at Dallas, Texas. The odd-looking but extremely practical machine drills a 6-inch hole into the chalk, bells out a conical bottom 18 inches in diameter, and moves quickly on to the next hole.

The drill rig consists of a four-wheel chassis carrying an Ingersoll-Rand 600-cfm Gyro-Flo compressor. All its operations are air-powered and air-controlled. A tower mounted over the rear wheels carries two 4-inch-square drill shafts, each of which can be raised and lowered separately. Each shaft is rotated by a separate air motor. One shaft carries the drill bit while the other has the expanding flare tool which cuts the conical bottoms.

Gouging its way through the chalk by combined rotation and downward pressure, the drill bit cuts a clean straight hole of the required depth. Air, forced down through the center of the shaft and bit, blows loose particles to the surface. When the drill is removed, the entire assembly is moved sideways by air power until the second shaft is directly over the hole.

Then the enlarging bit, with its blades retracted into a cylindrical head, is inserted into the hole. When the bit strikes the bottom of the hole, the pressure forces the hinged cutting arms to swing outward at the bottom. The shaft is then rotated to cut the conical bottom while air blows the loose material to the surface. As the bit is withdrawn, the cutting arms retract into the head and permit the bit to pass back through the 6-inch hole without disturbing the sides.

Air motors propel the machine forward to the next location so that the operator does not have to leave his seat. Air-powered steering and brakes give him complete control of the machine. This unique rig has a self-leveling device by which the operating platform can be kept level even when the machine is standing on a steep grade. Vertical holes are drilled with the machine standing on the 20 per cent grade of the steep part of the chute.

Number 11 reinforcing rods are inserted into the holes and a large hook is left projecting up into the concrete slab. Holes are then filled with a non-shrinking grout, obtained by adding aluminum powder in the amount of 0.01 per cent of the cement. Grout is mixed in a central plant and transported to the job in a concrete bucket on a dump truck. A Koehring Mud-Jack receives the grout from the bucket and pumps it through a hose into the holes.

Sand Frost Blanket

Insulation in the form of a sand-gravel blanket covers the chalk base to a depth of 3½ feet over the spillway area except in the stilling basin. Since water will always stand in the stilling basin, there is no danger of frost penetration. The other areas are subject to frost which could penetrate to the chalk and cause heaving which would damage the concrete slab.

Sand material for the insulating blanket was excavated from the discharge channel by a 30-inch hydrau-

(Continued on next page)

Spillway excavation at Fort Randall Dam, S. Dak. is handled by a Marion 111 dragline, which loads chalky material into a 50-ton Euclid. The Euclid is powered by two 300-hp diesel engines, each one driving a rear axle.



THE No. 12 MAKES BLUEPRINTS COME TRUE



This No. 12 Motor Grader, owned by Daley Corp., is bank-sloping for a canal along the new Wabash Freeway, San Diego, Cal.

When the engineers ask for a clean 40-degree bank, put a Cat® No. 12 Motor Grader on the job. You'll get it, right down to fractions of an inch. And the best of it is that any good operator can work accurately with this machine. Here are some of the features that make the No. 12 outstanding:

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Don Daley, of Daley Corp., San Diego, with ten big yellow units working on the Wabash Freeway, says: "Every year

our faith in Caterpillar's engineering features, economy, long life, trade-in value and good dealer service is strengthened. The machine that stands up longest and does the job is the one to make money with."

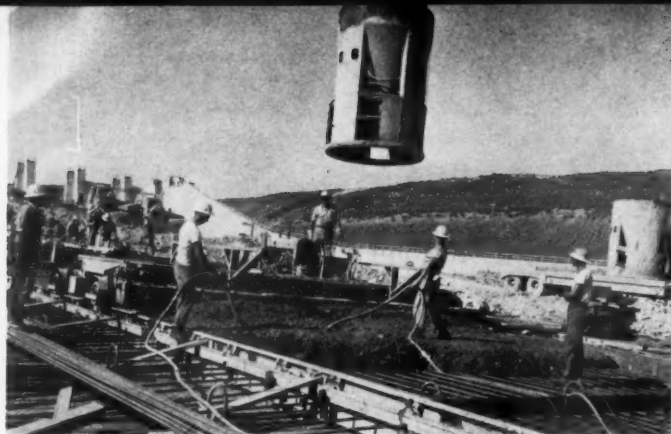
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Three Chicago Pneumatic air-operated vibrators consolidate concrete ahead of the finishing lineup. Highway rigs are paving the spillway in 25-foot-wide lanes. C&E Staff Photo

The contractors knew they would have to contend with strong winds and heavy seas during the building of a bridge across Tampa Bay on the west coast of Florida. The complete pile driving job for the bridge required a total linear length of more than 14 miles of piling.

Sure enough, a violent storm developed during the operations. However, through the contractor's skill and efforts, the pile-driving operations were completely successful, using a McKiernan-Terry No. 9-B-3 Double-Acting Hammer for cofferdam sheeting and McKiernan-Terry No. 10-B-3 and 11-B-3 Hammers rigged for under-water operation to drive the pier foundation piles.

You, too, can securely depend on McKiernan-Terry Hammers for your pile driving operations, no matter what the conditions and requirements may be. Write for catalog describing the complete McKiernan-Terry line of 16 types and sizes of Double-Acting Pile Hammers and Extractors and Single-Acting Pile Hammers

lic dredge during one of the earlier stages of excavation. It was piled beside the channel in a waste area below the dam site. At this pile, a Pioneer conveyor, fed by an Allis-Chalmers HD-20 tractor with Gar Wood dozer, loads the material into bottom-dump Euclids which make the mile and a half haul to the spillway.

Before the sand is placed, the chalk base is swept clean by a power broom pulled by a Hough Payloader. The Euclids then spread the sand as they dump. Compaction and leveling of the material is done by Allis-Chalmers HD-20 and Caterpillar D8 tractors with dozers. On the 20 per cent grade, the Euclids unload going downgrade. Tractors carry material on the dozers while making the up-

grade run, then back down to the bottom empty. Caterpillar No. 12 graders finish the surface.

To provide a solid surface on which equipment for succeeding operations can travel, a 6-inch layer of clay-stabilized gravel is placed over the sand blanket. This gravel, screened to 2-inch-maximum size, has sufficient clay added so that 7½ per cent of the material passes the 200-mesh screen. Plasticity index of the minus-40 material ranges between 8 and 12. The material is hauled about four miles from a pit to the job.

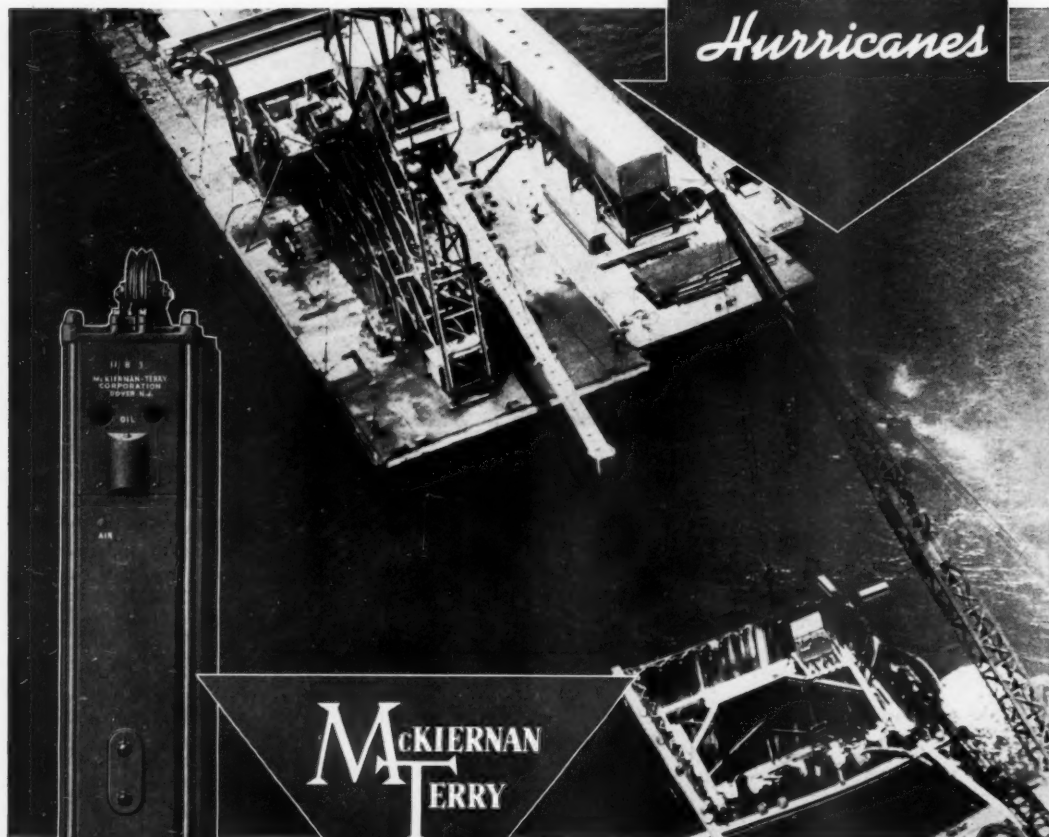
Two 1,000-gallon water tanks, one on a Chevrolet truck and the other on an International, aid compaction by distributing water over the gravel. Compaction by tractors and rubber-tired equipment results in densities of approximately 100 per cent Proctor. This gravel surface supports the paving forms as well as incidental equipment such as the drilling machine and Mud-Jack.

Paving Operations

Highway-type equipment, modified for the 25-foot panel width, finishes the slab panels in a manner similar to highway paving. Concrete is mixed in a central mixing plant which also supplies concrete for other structures being built. At the plant, the concrete is loaded into 4-cubic-yard Blaw-Knox bottom-dump buckets carried on semi-trailers. Two buckets are carried on each trailer, and International L190 and R210 trucks with tandem rear axles supply the motive power.

On the spillway floor, a Manitowoc 3900 crane picks the buckets off the trucks and swings them into pouring position. Air-operated gates discharge the concrete into the forms and the crane swings the empty bucket back to the truck. Three Chicago Pneumatic vibrators work down the concrete around the heavy reinforcing mat. Air for the vibrators as well as for operating the bucket gates is supplied by a Chicago Pneumatic 315-cfs compressor.

Driving
74,750
LIN. FEET OF
PILING
Against
Hurricanes



One of the reinforced cofferdams of the Tampa Bay Bridge piers for which cofferdam sheeting and foundation piles were driven by McKiernan-Terry Hammers. Parsons, Brinckerhoff, Hall & MacDonald, Consulting Engineers; Hardaway Contracting Co., Contractors.

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CONTRACTORS AND ENGINEERS

Reinforcing for the 18-inch-deep slab, which makes up the large area having the 4 per cent grade, consists of a mat of No. 9 reinforcing bars at 12-inch centers in both directions. Mats are assembled, tied, and placed on chairs at the proper elevation, then concrete is worked down around the bars. The concrete has 3-inch-maximum aggregate and is normally poured with a slump of about 1½ inches.

Following the placing operation, the concrete is finished by a Jaeger finishing machine and a Koehring longitudinal finisher. Hand belting provides the final finish. The slab is water-cured with a paper-backed burlap cover for 14 days after pouring.

On the steeply inclined section and in the stilling basin, the slab increases in thickness from the minimum of 18 inches to as much as 4 feet.

The design of the concrete mix is based primarily on durability. Typical proportions for a 2-yard batch are:

Water	390 lbs.
Cement	770 lbs.
Sand	1,956 lbs.
Coarse aggregate	
¾-inch to No. 4	1,486 lbs.
½-inch to ¾-inch	1,534 lbs.
¾-inch to 1½-inch	1,772 lbs.
Protex	18 oz.

This mix produces a concrete with about 6 per cent air at the mixer and with a slump of approximately 1½ inches.

With a crew approaching 350 workmen at a maximum, the contractor is maintaining a schedule which should see the spillway structures completed by the end of this year.

Personnel

Corps of Engineers personnel on the Fort Randall Dam project include area engineer, G. O. Evans; assistant area engineer, C. R. Brown; executive assistant, T. J. Reading; and resident engineer in charge of spillway construction, Earl E. Wohlford.

Oscar McCormick is project manager for Al Johnson & Associates.

Roger Evans is project engineer, Ben Benson is general superintendent, and John Gaughan supervises the preparation of the base. Jack Bender is superintendent in charge of concrete operations.

THE END

Crawler Tractor Brochure

A brochure describing its complete line of diesel-powered crawler tractors is announced by Allis-Chalmers Mfg. Co., Box 512, Milwaukee 1, Wis. The literature details operational methods and features of the four crawlers in the line. Ratings of these models are from 40 to 175 hp.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 219.



Battery-Powered Phones Have One-Mile Range

Two-way intercom phone sets, complete and ready to operate, are offered by the Kingsdown Cable & Wire Co., Schiller Park, Ill. Sets

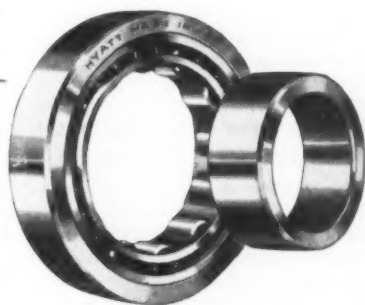
include phones with a built-in buzzer, 500 feet of weatherproof double wire, batteries, and wall clips. The phones may be operated up to a distance of one mile by adding more wire to the line. Additional phones may be hooked in at any point along the line.

For further information write to the company, or use the Request Card at page 18. Circle No. 251.

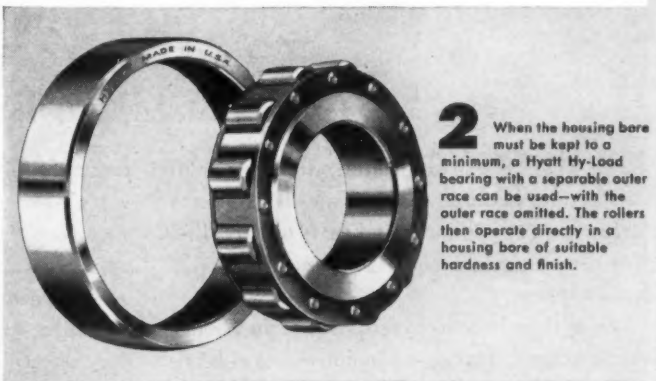
M-M Elects Ross

The board of directors of Minneapolis-Moline Co., Minneapolis, Minn., has elected E. W. Ross vice president of the firm. Starting with the manufacturer of engines and industrial tractors in 1913, Mr. Ross has held various positions within the organization and has been a member of the board of directors since 1944.

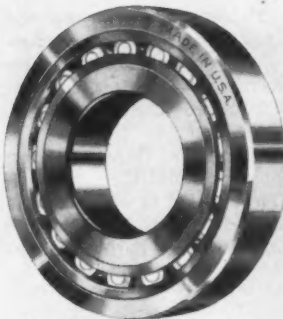
3 ways to handle your RADIAL LOAD PROBLEM



1 If your design requires a large shaft diameter to produce greater rigidity without disturbing boundary dimensions, a separable inner race type Hyatt Hy-Load bearing can be used with the inner race omitted. Rollers operate directly on a suitable hardened and ground shaft.



2 When the housing bore must be kept to a minimum, a Hyatt Hy-Load bearing with a separable outer race can be used—with the outer race omitted. The rollers then operate directly in a housing bore of suitable hardness and finish.



3 For designs requiring a bearing installed as a unit, there is the non-separable type of Hyatt Hy-Load. Whether you select a separable or non-separable type of Hyatt Hy-Load, they are available in a wide range of sizes.

If your design applications involve radial loads, the best way to handle the job is with Hyatts—for Hyatt offers industry's most complete line of straight radial roller bearings! Hyatt Hy-Loads, for example, are made in three diameter series and two basic widths, to standard dimensions. There are ten major types—for the heaviest radial loads, and light or intermittent thrust loads. Four have separable inner races, two have separable outer races and four are non-separable, thus permitting wide flexibility in design and assembly procedures. Write for our general catalog No. 150—it will put the solution to any roller bearing problem at your fingertips. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT

STRAIGHT BARREL TAPER

ROLLER BEARINGS

Shore Faster

WITH ROOSHOR (EXTENSION TYPE)

The New Rooshor (with the extension head) gives greater job economy. This fully-adjustable Rooshor—full 6 ft. adjustment—can be used as a flat-head shore, a male-head shore and as an extension shore by merely inserting any length 545 4 x 4 into the steel head. Instantly adjusted to "hairline" accuracy. No pins or screw adjustments to cause needless delays. Wooden upper members permit easy fastening of bracing.

Rooshors and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities. Write for Bulletin 454.

BAKER-ROOS, INC.
602 WEST McCARTY STREET
P. O. Box 892, Indianapolis 6, Ind.

NAMES IN THE NEWS



Daniel N. Mandell, the new Director of Operations of the Port of New York Authority.

New Director of Operations For N. Y. Port Authority

The former Acting Director of Operations of The Port of New York Authority, Daniel N. Mandell, assumed his duties this month as Director of Operations of the bi-state agency. He succeeds Billings Wilson, who has retired after 32 years' service.

Mr. Mandell's first position with the Port Authority was as Chief of the Division of Surveys and Budget Control. Subsequently, he was Acting General Superintendent of Terminals, and then Deputy Director of Tunnels and Bridges. Before working for the agency, he was an administrative analyst in the Bureau of the Budget and Chief of the Finance and Accounts Office of the National Capitol Housing Authority.

He is a member of the American Association of Port Authorities and the American Bridge, Tunnel, and Turnpike Association.

H. E. Barrentine Joins Baltimore Contractors

H. E. Barrentine, Sr., formerly associated with the Chemical Plants Division of Blaw-Knox Co., Pittsburgh, Pa., as project manager and consulting engineer on heavy industrial plants and refineries, is now construction management engineer with Baltimore Contractors Inc., Baltimore, Md.

Previously, Mr. Barrentine was associated with the U. S. Government for 15 years as a specialist in hydroelectric plants, multipurpose dams, air bases, and harbor installations.

New Booth & Flinn Officer

Elected treasurer and assistant secretary of Booth & Flinn Co., Pittsburgh, Pa., is Donald C. Jones. He fills the vacancy created by the death of Norman T. Wellings.

Officers of the organization include Morris E. Lipsett, president; J. C. Knee and Karl C. Warner, vice presidents; and Samuel C. Bowers, secretary.

Army Research Labs Appoint New Head

Col. H. F. Sykes, Jr., has assumed command of the Engineer Research and Development Laboratories of the U. S. Army Corps of Engineers, Fort Belvoir, Va. He succeeds Col. H. Milwit.

A graduate of West Point, Colonel Sykes has served with the 13th Engineers and with the 2nd Engineers at Fort Logan. He worked on mili-

tary construction in the Canal Zone, and in the Philippines and Tokyo as chief of operations. At the Office, Chief of Engineers, he served as executive to the assistant chief of troop operations, and for one year he was chief of the Engineer Research and Development Division there.

M-C & S Elects Purdy

Election of Irving B. Purdy as a vice president of the firm has been announced by Merritt-Chapman & Scott Corp., New York, N. Y. A veteran of 17 years service with the company, Mr. Purdy has served as director of a number of M-C & S projects both in the United States and abroad. He will now direct all industrial and building construction activities under M-C & S contract.

Building Research Group Elects New Officers

The president of the Building Research Institute for 1954-55 is Fred M. Hauserman, president of E. F. Hauserman Co., Cleveland, Ohio, manufacturer of metal office partitioning. Edmund Claxton, director of Research for the Armstrong Cork Co., Lancaster, Pa., is vice president.

The institute, a technical society for men in the building industry, works toward and sponsors research on improved building construction. It is a branch of the Division of Engineering and Industrial Research of the National Academy of Sciences, National Research Council, Washington, D. C.

Board members appointed were F. Stuart Fitzpatrick, Dr. H. N. Huntzicker, Thomas D. Jolly, J. W.

HOW TEXACO ASSURES LONGER ENGINE LIFE



BY KEEPING engines clean — free of sludge and harmful carbon deposits — Texaco helps you (1) add miles and years to parts life, (2) decrease maintenance costs and (3) cut fuel consumption.

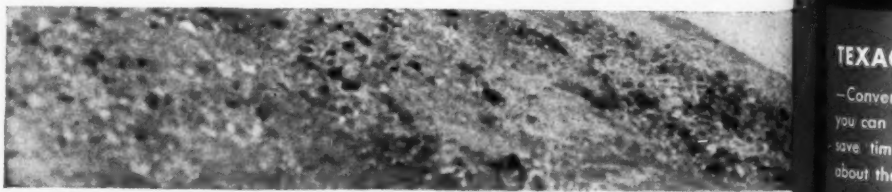
Enjoy these benefits by using one of the famous *Texaco Ursa Oil* series — a complete line of lubricating oils especially refined to make diesel and heavy duty gasoline engines give *more power with less fuel over longer periods* between overhauls. There's one exactly right for your engine, whatever its size, type, speed, or fuel used.

To keep hydraulic systems free from sludge,

rust and foam, use *Texaco Regal Oil R&O*. It provides outstanding protection, smooth performance, longer life for pump and parts. Lubricate open gears and wire rope with *Texaco Crater*, or *Texaco Crater X Fluid*. They assure quieter gear operation — keep wire rope strong longer — reduce upkeep costs.

Let a Texaco Lubrication Engineer help you do more work at lower cost. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO

CONTRACTORS AND ENGINEERS

Kreuttner, Harry C. Plummer, R. A. Smith, Robert W. Cutler, Dr. H. A. Leedy, and Clarence A. Thompson.

Partners Are Elected By Engineering Firm

The election of John O. Bickel, Rush F. Ziegenfelder, and William H. Bruce, Jr., to partnership in the New York, N. Y., consulting engineering firm of Parsons, Brinckerhoff, Hall & Macdonald has been announced by the company.

Mr. Bickel has been associated with the company for 20 years, the last several of which he has been engineering manager. Mr. Ziegenfelder, executive manager of the San Francisco office, joined the company in 1941. Mr. Bruce is the present manager of the Trenton, N. J., office.



Harvey F. McPhail of Kuljian Corp.

McPhail Joins Kuljian

Harvey F. McPhail, who recently retired from the Bureau of Reclama-

tion, has been appointed by the Kuljian Corp., Philadelphia, Pa., to head the firm's hydroelectric division. He will supervise the construction of hydroelectric projects both in the United States and abroad.

While with the Bureau of Reclamation, Mr. McPhail supervised the design and construction of the generating systems of Grand Coulee, Hoover, and Shasta dams, and in 1953 he was awarded a Citation of Distinguished Service for the part he played in the development of the power program of the U. S. Department of the Interior.

Watson Heads Committee For Chamber of Commerce

Martin W. Watson, general contractor of Topeka, Kans., has been made chairman of the 40-member

construction and civic-development department committee of the Chamber of Commerce of the United States for 1954-55.

The committee's objectives are promotion of construction markets, furtherance of better building codes and construction techniques, and the development of highways and public works planning. Committee members will recommend policies to the Chamber of Commerce on these issues for review and approval.

Mirgain is Made Dean At North Dakota College

Frank C. Mirgain, head of the department of civil engineering at Cooper Union, New York, N. Y., since 1949, has been appointed Dean of Engineering at North Dakota Agricultural College, Fargo, N. Dak.

Mr. Mirgain, secretary and former vice president of the Metropolitan Section of the American Society of Civil Engineers, is former president of the Raritan Valley Society of Professional Engineers and former president of the New Jersey Society of Professional Engineers. He was graduated from Purdue in 1931, and had a teaching fellowship at Rutgers University while working for his master's degree.

Three European Nations Honor D. B. Steinman

Dr. D. B. Steinman of New York, N. Y., internationally known bridge engineer, was awarded new decorations and honors during a recent tour of European countries. Both professional and civic recognition was paid to the world famous engineer in Italy, France, and Belgium.

In Italy, Dr. Steinman was given an honorary degree of Doctor of Civil Engineering by the University of Bologna and a gold medal and a diploma of honor by the International University Pro Deo at Rome.

In Paris, he was presented with the French Medal of Recognition; the Gold Medal and Diploma of Honor of the French Society of Inventors, signifying "recognition by the engineers of France"; and the medal and diploma of honor of the Societe Nationale des Medailles Civiles.

Just before returning to this country, Dr. Steinman received three additional French decorations for his services to public interests and education.

PCA Appoints Lochow

Robert H. Lochow has been appointed district engineer of the Seattle, Wash., office of the Portland Cement Association, succeeding Frank J. Barrett, who is retiring.

Joining PCA as field engineer for the Seattle office in 1949, Mr. Lochow was appointed statewide paving engineer in 1952. In his new position, he will direct activities of the association in western Washington.

Baltimore Firm Appoints

Albert C. Klingenberg has been appointed director of engineering, planning, and sales for Baltimore Contractors, Inc., Baltimore, Md. Since joining the firm three years ago, Mr. Klingenberg has been in charge of methods and planning, and he recently served as director of subsidiaries.

TEXACO SIMPLIFIED LUBRICATION PLAN

—Convenient and cost-saving. With not more than six lubricants, you can handle all major lubrication. Use it to prevent mistakes, save time and money. Ask your Texaco Lubrication Engineer about the Texaco Simplified Lubrication Plan made for your job.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



Rocks Slow Pile-Driving For Bridge Cofferdams

L. B. Foster piling to form the cofferdam for pier 2 of the new bridge across the Shepaug dam reservoir is driven through heavy rock by a McKiernan-Terry hammer handled by a Lorain crane. Air for the hammer is supplied by a Jaeger compressor.

It costs less to PUSH PIPE than dig ditches



cut job costs and installation time...

USE RODGERS HYDRAULIC JACKING UNITS

You'll cut pipe laying expenses and do the job faster and better by *pushing* pipe under highways, railroad tracks, and other obstructions. You'll avoid time-consuming ditching, backfilling, tamping and paving operations that delay the job and roll up the cost.

Rodgers Hydraulic Jacking Units can be used wherever you want to *PUSH, LIFT or PULL*. Multiple jack installations provide equal pressing or lifting power at all points and are ideal for raising or positioning large structural sections.

Photo shows a public utilities crew pushing a 16" diameter steel pipe in 16-foot sections through 44 feet of earth. Two 150-ton capacity, 30-inch ram travel, double-acting Rodgers Jacking Cylinders are doing the job. A hand operated Rodgers Hydraulic Pump furnishes equal power to both jacks.

Rodgers Jacking Cylinders used singly or in groups provide steady, precisely controlled power to jack steel casing, corrugated pipe or compressed concrete tile—and they can be used for all types of accurately controlled lifting operations on structures.

Rodgers Jacking Cylinders are available in capacities from 50 to 600 tons with standard ram travels from 6 inches to 48 inches. Longer ram travels to 72 inches available on special order. Tunnel contractors are invited to inquire about our special hydraulic equipment for tunnel shield construction which includes a series of special hydraulic cylinders, power pumps and controls.

A selection of hand or power operated Rodgers hydraulic pumping units offer the exact jacking combination needed for your job. Let Rodgers engineering department assist you in your selections.



Send for your free copy of Rodgers Bulletin, 317A. It contains a complete description of Rodgers Hydraulic jacking units, quick couplers, valves and hoses, also a description of hydraulic equipment used in the construction of tunnel shields.



Rodgers Hydraulic Inc. 7415 WALKER ST., MINNEAPOLIS 16, MINN.

CONSTRUCTION of piers for a new vehicular bridge over the future reservoir of the Shepaug hydroelectric dam in Connecticut is proceeding at a comparatively rapid pace now that some tricky pile-driving for the cofferdams has been completed. The presence of considerable rock both in the riverbed and on shore complicated this early phase of the project.

When the Shepaug Dam project (see "Shepaug Dam Will Provide More Power for Industry", C. & E., May, 1954, pg. 8) is completed in the fall of 1955, approximately 1,900 acres of land in the Housatonic River valley will be flooded to form a man-made reservoir. Present bridge facilities carrying State Route 133 across the river near Brookfield, Conn., will be approximately 40 feet under water.

A new two-lane span of the quadruple-truss type is presently under construction at the site. The structure will be 844 feet long, 30 feet wide, and cost \$1,154,000. The Mariani Construction Co., Inc., New Haven, Conn., is the contractor on the job.

Cofferdams Built

The substructure consists of two concrete abutments on each shore and three concrete piers that will rest in the reservoir. Three cofferdams of steel sheet piling in 30-foot lengths, rented from the L. B. Foster Co., Pittsburgh, Pa., have been erected—two in what is now the riverbed and a third on the shore. Dimensions of the shore cofferdam are 20 x 58 feet, while those in the river measure 22 x 60 feet each.

"How to operate excavation equipment"

New book just published covers proper operation, and control of all types of equipment including shovels, tractors, graders, rollers and other machinery.

This book saves time and money in training new personnel, and provides handy tips which mean less down time.

Circle number 500 on the bound-in Red Request Card for more details on "How to operate excavation equipment", plus handy order form.

Contractors and Engineers
magazine of modern construction
470 Fourth Avenue, New York 16, N. Y.

CONTRACTORS AND ENGINEERS

While concrete is being placed for pier 1 on the shore at rear, finishing touches are put on the cofferdam for pier 2 just offshore. When the area is converted to a reservoir by the dam, the water line will reach almost to the trees shown in the near background.

**Light touch does the trick
as steel sheet piling
is driven for new span across
Shepaug dam reservoir**



Mariani's crews brought in one of three Lorain cranes consigned to the project to handle the piling and drive it to a depth of about 15 feet. A 2-ton McKiernan-Terry hammer supplied with air by a Jaeger portable compressor was used to drive the piles. Excavation of the cofferdams was handled by either a 1 or 1½-yard crane, depending on the type of earth to be removed.

Although the current of the Housatonic River did not present a problem during the construction of the cofferdams, this phase of the project was complicated by the necessity of driving through a great deal of rock both on shore and in the riverbed. Often the piling had to be "babied" through the rock with a lightweight pile-driving hammer.

In some cases it was necessary to blast as much as 6 feet of rock under pier 1 (on shore) and as much as 8 feet under piers 2 and 3 in the river.

Concrete Placing

Once the cofferdams were built, the contractor could see that concrete pours for each of the piers would go quickly. Concrete for the shore pier was poured in three stages totaling 2,000 cubic yards. The pier is 96 feet high. Concrete for the other two piers is being poured in the same manner, but each will contain about 3,000 cubic yards and will stand slightly higher than pier 1.

Construction on the new bridge was begun last February and is expected to be completed by May, 1955. The schedule is a tight one, since river water is expected to rise during March of next year. **THE END**

The Quinn Standard
FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 40 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers of
QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645 - 12th St. Boone, Iowa

SEPTEMBER, 1954



PAVE

**Neither Heat,
nor Rain,
nor Ground Water. affect the Pave bond!**

PAVE **HEAT-STABLE**

Pave is the only additive insuring a stronger, more durable bond with hot mixes, cut-backs, and emulsions—and easy or hard-to-coat aggregates. Because—Pave is not destroyed in asphalt by heat . . . Pave securely binds asphalt to dry or moist aggregate . . . Pave resists attempts of ground water to weaken the asphalt-aggregate bond through "moisture creep."

To lay more stable roads and patches that give greater service, use Pave in your asphalt road material.

For full details, write . . .

Carlisle Chemical Works, Inc.
Reading, Ohio

Manufacturers of fine industrial chemicals

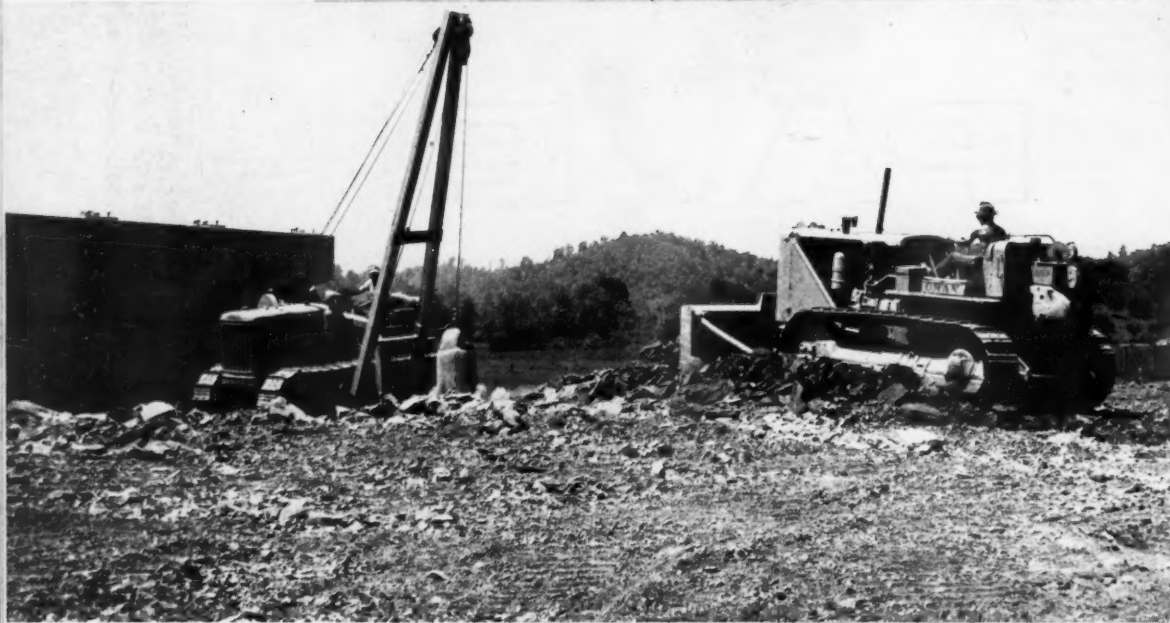


Asphalt is loaded into a GMC dump truck, one of 20 which Sloan Construction Co., Inc., Greenville, S. C. rented for this black-top job. C&E Staff Photos

Modernizing a Highway For

On the
West Virginia
Turnpike

a D7 with sideboom cuts rocks down to size!



For a tough job on the West Virginia Turnpike, Oman Construction Co., Nashville, Tenn., used a strong-armed Caterpillar team.

The job was to push up a 20-foot-high fill for an underpass. Rock was brought in at the rate of 275 loads a day. But specifications were rigid on the size of rock to be used in the fill.

So Oman put a 5000-pound weight on the sideboom of a pipe layer-equipped CAT* D7 Tractor to break rocks to required size. This is an example of the versatility of these units which can lift many tons with ease. Cat Pipe Layers are essentially mobile cranes which can get in and out of rough ground conditions while carrying loads. There are five models available with lifting capacities up to 83,600 pounds.

In addition to the D7 working with the sideboom unit, Oman had on the job seven DW21s, more than twenty D8s and three No. 12 Motor Graders.

Everywhere along the rugged, mountainous terrain of the 88-mile West Virginia Turnpike contractors had similar Caterpillar-built fleets.

Job-wise contractors know it makes sense to standardize

on Cat equipment. Not only do you have equipment that can handle a variety of jobs without costly down time, but operators and mechanics become familiar with one make. And, of course, you have the advantage of one-stop service from one dealer.

He's the man to see when you have important work coming up. He has field-proven equipment to fit any job. And he'll be happy to prove it—on your job.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE

THEY REALLY KNOW how to stretch their highway dollars in the South.

At a cost of only \$9,000 per mile, the State of South Carolina has modernized the 22½-mile stretch of U. S. 17 between Myrtle Beach and the North Carolina line.

Before modernization, the heavily traveled blacktop roadway was only 20 feet wide and had a dangerously high crown. Now, for the relatively low price of \$199,000, the 22½-mile stretch has been widened to 24 feet with sand asphalt, leveled with a course of the same material, and topped with a smooth wearing surface of bituminous concrete.

Fast Job

Sloan Construction Co., Inc., Greenville, S. C., started the job April 1, 1954 and worked 12 hours a day to finish by May 27. About 21,000 tons of sand-asphalt base and 22,100 tons of bituminous-concrete top were required.

The job was strictly a production operation. A Caterpillar No. 12 grader with a drop-blade attachment was first sent ahead to box out a 2-foot-wide strip along the edge of the old pavement. The leveling course of sand-asphalt was then applied in half-roadway widths by a Barber-Greene finisher. The screeds on the finisher were adjusted to lay a course 12 feet 3 inches wide and varying in thickness from a minimum of 5 inches in the boxed-out strip to practically zero at the crown of the existing road. The job was completed with a 1-inch wearing course of bituminous concrete applied on top in two 12-foot strips.

The contractor produced all of his sand-asphalt mix with a Barber-Greene 848 portable continuous-mix plant which was set up in a sand pit near the highway. Asphaltic-concrete production reached 2,022 tons in 12 hours on May 11. The next day, 2,123 tons were produced and laid—a record for one day's production in South Carolina and possibly elsewhere.

Local sand was pushed into a stockpile with a Caterpillar D6 dozer and fed into the cold-feed hopper by a Lima ¾-yard clamshell. A reciprocating feeder moved the material out to a bucket elevator which dropped it into the dryer. From here the sand moved through the plant to the continuous pugmill, the surge hopper, and finally the trucks.

The all-electric plant was powered by one Caterpillar 75-kw and two Cat 30-kw diesel-electric sets. Steam for jacketing the 20,000 asphalt-storage tank was supplied by a Lefell 75-hp boiler. The 85 to 100-penetration asphalt was trucked in from Esso Standard Oil Co., in Charleston, S. C. A Kinney metering pump transferred the hot asphalt to the pugmill. Fuel oil for the Hauck burner and the steam boiler was stored in an 8,000-gallon tank and circulated by a Viking 1-inch pump.

Sloan used a fleet of about 20

CONTRACTORS AND ENGINEERS

way For Only \$9,000 Per Mile

rented trucks to haul the mix to the paver. Sand-asphalt production averaged between 80 and 100 tons per hour. On the roadway, the paver was followed closely by a Galion 5 to 8-ton roller and a Buffalo-Springfield 10-ton roller.

Gravel for the 1-inch bituminous-concrete wearing course was supplied by a commercial producer. Shoulders were rebuilt by state forces.

Personnel

L. G. Gilliam was superintendent, and R. O. Smith, production manager, for Sloan Construction Co. The work was under the direction of the South Carolina State Highway Department, of which Claude R. McMillan is chief highway commissioner and S. N. Pearman, state highway engineer. Local resident engineer was A. D. Graham, and engineer inspector was J. L. Kirven. THE END

Work on Airborne Crane Set by Wayne Division

A research and development contract for a self-propelled rubber-tired airborne crane has been awarded to the Wayne Crane Division of American Steel Dredge Co., Fort Wayne, Ind. The contract, awarded by the U. S. Army Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va., specifies that the crane must be a small, lightweight unit with a heavy work capacity, capable of being dropped by parachute from cargo planes.

As with all equipment being developed for air drop operations, the unit must remain within the critical transport limitations of 16,000 pounds. The crane, which must be capable of operation one hour after delivery, will also be limited to a 37-foot length, 8-foot 4-inch width, and 6-foot 9-inch height.

Film on Wire Reinforcing

A new industrial film which tells the story of welded wire-reinforcing fabric has been released by The Colorado Fuel & Iron Corp., Denver, Colo. Titled "Reinforced for Life", the natural-color picture traces the reinforcing fabric from its manufacture to its diversified uses.

Prints of the film are available without charge on a loan basis. For information write to The Colorado Fuel & Iron Corp., Box 1920, Denver, Colo.

Clark Appoints DePolis

New general sales manager of the Industrial Truck Division of Clark Equipment Co., Buchanan, Mich., is L. A. DePolis, who will have headquarters in Battle Creek, Mich. He formerly was sales manager for Ross Carrier Co., a firm acquired last year by the Clark organization. Since then he has assisted with truck division sales.

A Lima 3/4-yard clamshell charges the cold-feed hopper with sand. The material, moving to a bucket elevator which drops into the dryer, travels through the plant to the continuous pugmill, the surge hopper, and the trucks.



King of Prussia Terminus near Philadelphia. Owner, Pennsylvania Turnpike Commission; General Contractor, L. G. Defelice and Son, Inc., North Haven, Conn.; Curb installed by Polselli & Angelucci, Philadelphia.

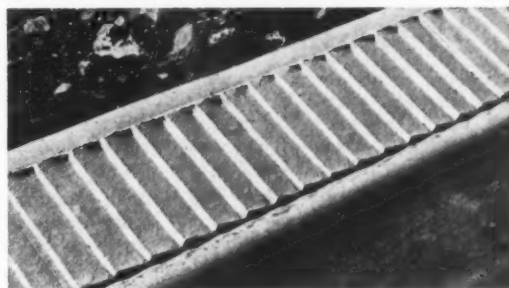
ON PENNSYLVANIA TURNPIKE THERE'S

A WHITE GUIDE TO SAFETY

Faster travel with greater safety—that's the purpose of this famous express highway. The white concrete reflecting curbs made with Atlas White Cement assure better round-the-clock visibility...serve as gleaming guides to curves, hills, bridges and traffic interchanges.

By day, these curbs stand out in marked contrast to darker highway pavement. They outline the road... show exactly where edges are located. After dark, their corrugated faces catch headlight beams and reflect them back to the driver, turning the curbs into brilliant ribbons of white. In rain, when better visibility is needed, most facets of the wet curbs become more mirror-like... even easier to see and follow.

More and more engineers are specifying White Concrete Reflecting Curbs for greater highway safety. Investigate it for your next project. For complete information, write to Universal Atlas Cement Company (United



CLOSE-UP OF TYPICAL CURB—Placement with Atlas White Duraplastic® is simple and fast. One method is to place a mortar mix of this air-entraining white cement on a gray cement base, screed to 1-inch thickness and score with a hand tool. Contractors prefer Duraplastic because it makes the mix more workable, more plastic.

States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

®"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS® WHITE CEMENT
For Concrete Reflecting Curb and Markers



UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.

SEMOLOID

For over 30 years leading architects have specified that the "Semoloid" formula (a liquid integral) be added to the mass mixture wherever concrete or mortar is used because SEMOLOID . . .

- Prevents shrinkage
- Produces a dense water-resisting concrete
- Increases strength of concrete up to 24.06
- Helps prevent cracks in concrete
- Keeps jobs on or ahead of schedule

Send for specifications and address of nearest distributor.

SEMOLOID CO., INC.

Croton-on-Hudson
New York



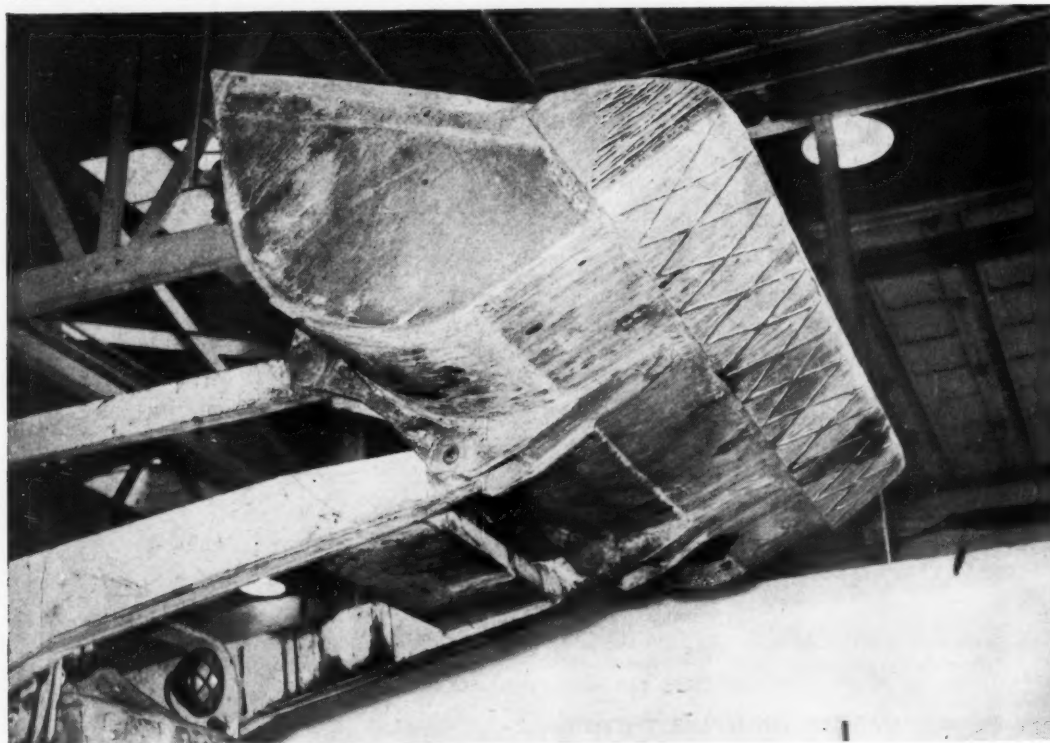
A useful accessory for transit mixers is the new Dyna-Chute which raises or lowers the discharge chute hydraulically in seconds.

Transit-Mixer Device Raises Discharge Chute

■ A new hydraulic control for transit mixers raises the discharge chute to full height in less than 10 seconds. The Dyna-Chute control, which may be installed on new or existing equipment, is made by the Monarch Road Machinery Co., 327 Front St., N. W., Grand Rapids, Mich.

The complete kit includes an electric-hydraulic 6 or 12-volt power-control unit, a hydraulic ram, a 6-foot hose, and all necessary fittings. The hydraulic ram exerts up to 1,500 pounds thrust.

For further information write to the company, or use the Request Card at page 18. Circle No. 310.



Hard-faced with Stooddy 21 along the lip and side plates, this scoop holds size and load capacity. A self-sharpening lip makes it easy to load.

PROTECT THE LIP AND SAVE THE SCOOP —A simple Stooddy hard-facing procedure for loaders

Protecting scoop loaders from wear is a relatively simple hard-facing job. Results are generally two-fold; 1) The bucket holds original size, thus retaining full capacity and 2) lips become self-sharpening, insuring easier loading.

MANY TYPES—Although many scoop loaders are manufactured today, hard-facing procedures are similar on all. Wear usually concentrates along the bucket lip and extends up both inner and outer sides of the end

plates. (Caution: Hardened steel lips as furnished by some manufacturers are not suitable for welding until surface hardening has been worn through.)

HARD-FACING DETAILS—A single $\frac{3}{4}$ " wide band of Stooddy 21, along the top edge of the lip, accomplishes two purposes:

It provides maximum wear protection for intense scuffing and abrasion against earth, paving materials, etc.

It makes the scoop self-sharpening by keeping the top surface from wearing as rapidly as the base metal.

End plates are hard-faced by a series of parallel or cross-hatched stringers, both inside and outside and along the leading edge.

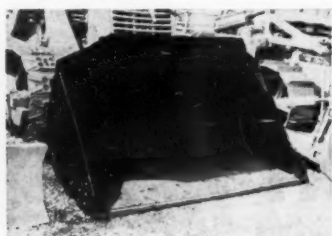
Replace severely worn lips with steel plate cut to size and hard-face as described above.

Stooddy 21 is suggested for protecting scoop loaders because of its high abrasion resistance and impact

strength. These two features are a direct result of high alloy content—yet Stooddy 21 is a low cost electrode. This and other equipment-saving applications are described in the Stooddy Guidebook. Ask your Stooddy dealer for a copy (consult the "Yellow Pages" of your phone book) or write direct.



The scalloped edge on this scoop is a variation that has been found to give excellent results under some conditions. Note the hard-facing material along the edge.



End plates are protected inside and out with a series of parallel stringers or cross-hatched beads of Stooddy 21.

Film on Cement Making

A 16mm sound and color motion picture showing the processes involved in the manufacture of cement has been released by the Calaveras Cement Co., San Francisco, Calif. Entitled "Gray Gold From the Mother Lode", the film is available to trade associations, professional societies, and school groups. In the 17-minute running time, the film traces the history of cement from the earliest days to the present, and shows quarry and mill operations at the Calaveras plant.

"Gray Gold From the Mother Lode" may be obtained without charge by writing to Mel J. London, vice president, Calaveras Cement Co., 315 Montgomery St., San Francisco 4, Calif.

G. M. Division News

The Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich., has appointed S. G. Morse manager of its distributor and dealer organization and analysis department. H. E. Smith replaces Morse as sales representative.

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New Centrifugal Pump

A new model contractor's pump is announced by the Gorman-Rupp Co., 305 Bowman St., Mansfield, Ohio. The manufacturer reports that at a total head friction of 25 feet this model will pump 166 gallons per minute with a 10-foot lift. The pump is of self-priming centrifugal design, and is fast priming to 30 feet static lift.

The Model 32F AKN 10M pump is driven by a Wisconsin AKN engine delivering 6.1 hp at 3,200 rpm. The pump measures 30 x 25 x 35 inches and has a net weight of 160 pounds. On 12-inch-diameter semipneumatic tires, its weight is 200 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 248.

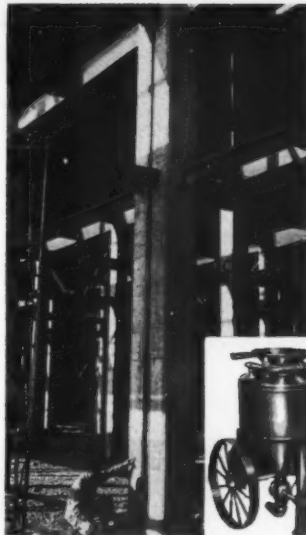
Roebling Names Cole To West Coast Area

New Pacific Coast manager of the construction materials division of John A. Roebling's Sons Corp., Trenton, N. J., is Robert J. Cole. On leave of absence from Roebling the last few years, he has been serving as president of Pointer-Willamette Co., Edmonds, Wash.

Mr. Cole has been associated with Roebling, manufacturer of cable, wire, and wire products, since 1923. He supervised cable installation on the Golden Gate and new Tacoma Narrows Bridge, and worked on the George Washington Bridge. He was named manufacturing manager of the wire rope division in 1945.

In his new position, Mr. Cole will direct the sale of Roebling wire and stranded steel products for pre-stressed-concrete use. His offices will be at 1740 17th St., San Francisco, Calif.

This new Gorman-Rupp wheel-mounted pump is of self-priming centrifugal design.



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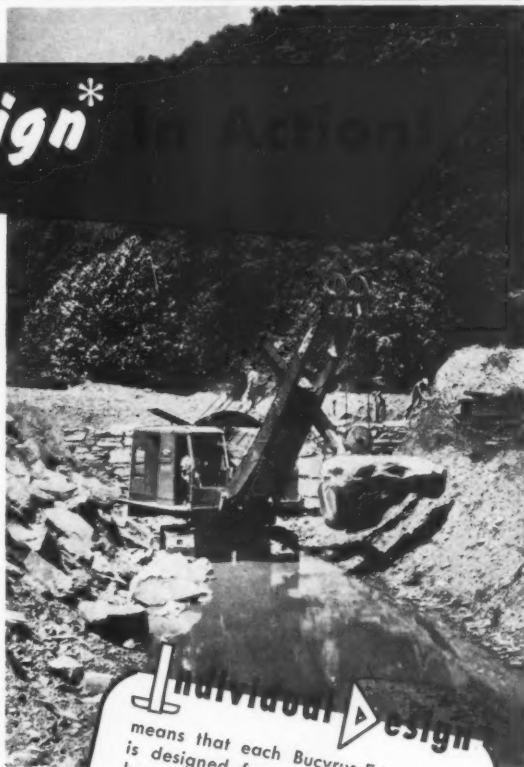
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Giant Amphibious Vehicle Is Undergoing Army Tests

Huge tires on this adaptation of the Gulf Oil Co.'s marsh buggy contrast sharply with standard size tires on a jeep. The 10-foot-diameter tires, specially designed by Goodyear Tire & Rubber Co., keep the vehicle buoyant in marshy terrain and give it good traction in desert areas.

An amphibious motor vehicle which can travel through water, swamp, and deep mire, and over desert areas where other wheeled vehicles would bog down, is under test for possible military use by the U. S. Army Transportation Research and Development Command, Fort Eustis, Va. The equipment is an adaptation of the Gulf Oil Corp. marsh buggy which has proved its worth in oil exploration along the marshy Gulf coast in the past 17 years.

This original rig had an overall length of 22½ feet, a width of almost 12 feet, and a height of 11 feet. A centrally pivoted axle enabled either wheel to rise two feet above the other, while rear wheels could pivot off alignment. This permitted the vehicle to cross obstacles insurmountable for other rigs.

Among innovations incorporated into the new machine are an enclosed cab which has Plexiglas windows. Enabling the vehicle to float are its 10-foot-diameter tires, built by Goodyear Tire & Rubber Co. Though they have a smooth tread, the tires secure traction by means of rubber-cleated chains which have an action similar to that of a paddle-wheel steamer. If one tire is punctured, a compressor feeds air into it through the hub to keep it fully inflated. If all tires fail in the water, the air-tight hub drums keep the vehicle afloat.

Operated by a four-wheel drive, the machine has a speed range of ¼ to 30 mph on land, and it can make up to six knots on water. It is capable of transporting a 1,500-pound load over any terrain, loads up to 4,000 pounds under many conditions, and has a trailer which can carry 2,000 pounds.

Bulletin on Small Trailer For Moving Equipment

■ Literature on a pintle-hook trailer of 10-ton capacity, suitable for transporting construction equipment, is available from the Schertzer Equipment Co., 32 Prospect St., Somerville 43, Mass. The trailer is 8 feet wide and has a 12-foot bed, and runs on four 8.25 x 20 tires. The 24-inch-high trailer is equipped with air and vacuum brakes.

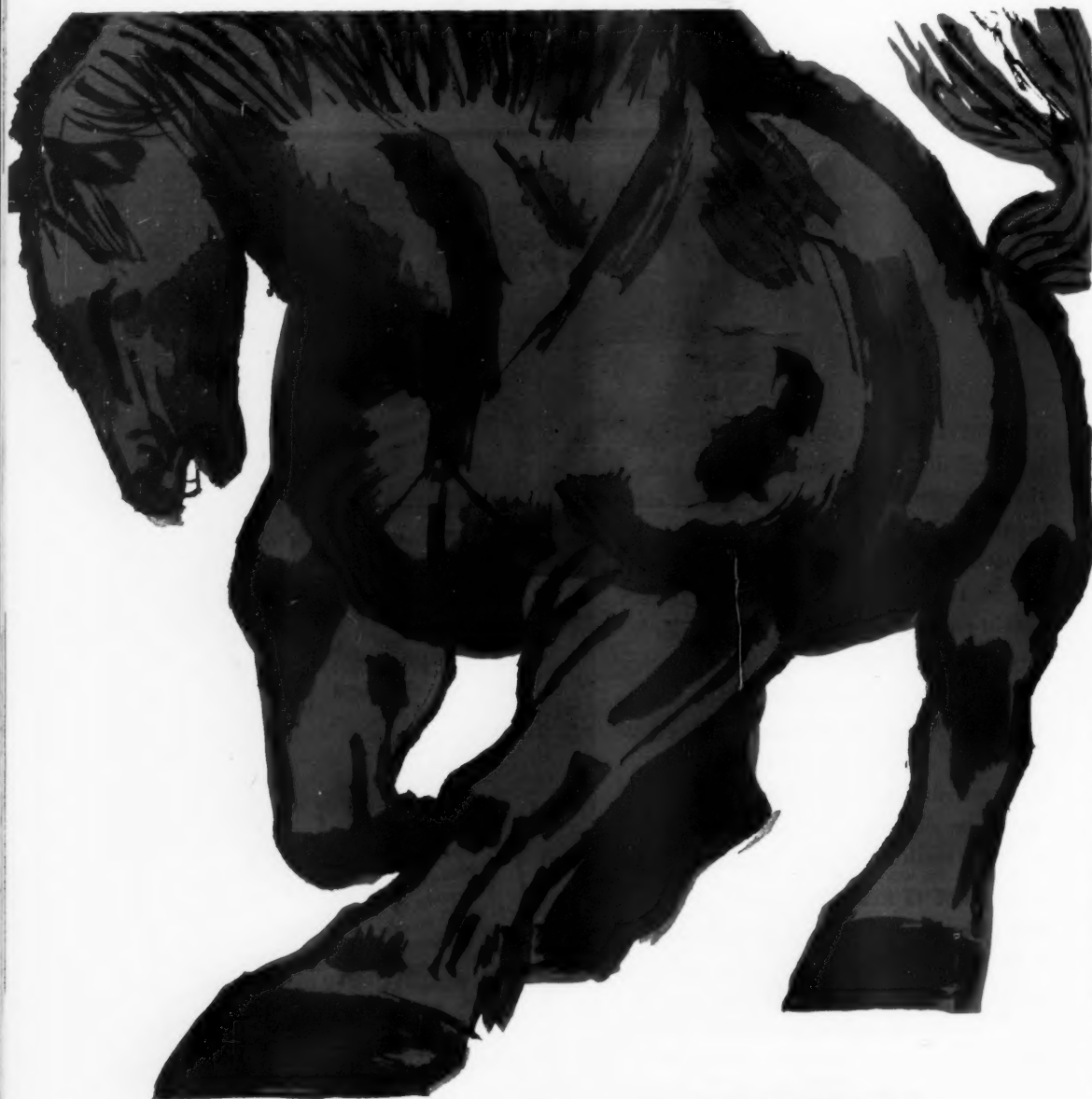
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 216.

B-E Appoints G. L. Read

A new sales manager for Bucyrus-Erie Co., South Milwaukee, Wis., manufacturer of excavating equipment, in all provinces of Canada east of and including Saskatchewan, is George L. Read. Mr. Read will have charge of sales of all B-E products, except water and oil well drills, in Canadian provinces east of and including Saskatchewan. He will have offices at 1 Swindon Road, Toronto 18, Ontario.

Mr. Read joined B-E's export sales department in 1945 as a sales engineer.

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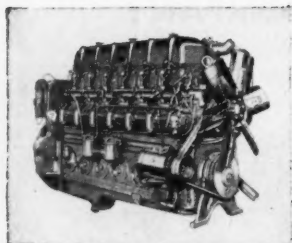
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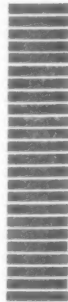
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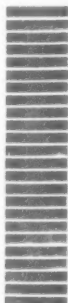
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New Technique Forms Drain For Flood-Control Project

In laying 51-inch-diameter reinforced-concrete pipe sections at a slope of 30 degrees for a drain on the Los Angeles County Flood Control Project, Charles Burch & Sons, El Monte, Calif., turned to the use of an unusual method which bypassed both jacking or tunneling. The 26th Street and Georgina Avenue drain in Santa Monica required the 8-foot-long sections of tongue-and-groove United Concrete pipe to run over a 65-foot bluff and slope down into Santa Monica Canyon at the end of 17th Street. The discharge end of the drain was to be about 175 feet from the base of the bluff.

The contractor first dug a 24-foot-deep shaft at the top of the bluff; then a pilot tunnel 3 to 4 feet in diameter was dug from both sides of the bluff. In this tunnel, a concrete cradle was poured. The cradle, 24 to 30 inches wide and 6 inches deep, established line and grade.

After several sections of beveled pipe had been set to form part of the vertical curve at the bottom, the balance of the pipe was inserted from the top of the bluff. When a section had been lowered into the shaft and lined up, gravity, the weight of the pipe, and a come-along were enough to move the last section and those ahead of it down the tunnel. Excess earth was cleared away ahead of the front section and removed down the tunnel and out through the pipe at the bottom.

Grout was poured down the tunnel around the outside of the pipe, and the joists were plastered on the

inside. The vertical curve at the top of the shaft was laid in an open ditch.

The Los Angeles County Flood Control Project No. 264 is part of the over-all plan of the Los Angeles County Flood Control District. Paul Rappe was superintendent on this portion of the project. H. Berkowitz was the Los Angeles County Flood Control inspector, working under the direction of Harold Ball, senior inspector.

THE END



Five sections of United Concrete pipe for a Los Angeles County flood-control drain move down the 30-degree slope on a concrete cradle in the pilot tunnel. Dirt pushed away from the front section is cleared out through pipe laid previously.



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See page 119



Huge Dredging Operation

As the Los Angeles heads toward open ocean making a cut, a dragline with 2½-cubic-yard bucket builds up the protective dike created by earlier dredging. The dike provides the dredge with protection during heavy seas.

U. S. Army Corps of Engineers Photo

THROUGH AN EXTENSIVE dredging operation, some of it done in the open ocean, 3,000,000 cubic yards of material was deposited off a 10-mile stretch of the California coast to prevent this shoreline from being swept into the Pacific. The project, a unique one in the artificial rebuilding of a beach, was done just north of the U. S. Naval Harbor at Port Hueneme to check erosion between the harbor and the Navy's Air Missile Test and Research Center at Point Mugu to the south.

The need for the work became apparent in 1939 when a protected small-craft harbor was built at Port Hueneme. Until this time, erosion along the 10 miles of shoreline was not a problem. The littoral drift in the Pacific carried sand from the

mouth of the Santa Clara River and deposited it along the shoreline to the south. After the harbor at Port Hueneme was purchased by the Navy in 1942, a stone sea wall was constructed half a mile into the ocean to protect nearby property from the littoral drift. Thus, sand which normally would be carried southward was blocked by the sea wall. As sand began to pile up north of the sea wall, the beachline to the south began to erode. The beach was finally cut back 700 feet, and continuing erosion threatened the Navy installation at Point Mugu.

In 1950, after appeals had been made to Congress, the Los Angeles District of the U. S. Army Corps of Engineers was requested to make a survey report on the situation. The

gist of this report was that artificial replenishment of the beachline to the south should be made from a feeder supply beach by hydraulic equipment.

The studies showed that beaches needed about 500,000 cubic yards of sand annually. Also recommended was the construction of a small-boat harbor a short distance north of Port Hueneme. Construction of this harbor was advised mainly because the work would yield about 3,000,000 cubic yards of material needed along the coast to the south. A 2,300-foot breakwater some distance offshore from the harbor was also recommended as a means of protecting the harbor and any subsequent dredging operations, while serving as a trap for sand being carried

down the coast by the littoral drift. Cost of the harbor and initial dredging was estimated at \$5,000,000. The annual maintenance dredging bill was placed at \$487,000.

Two-Phase Project

This report lay shelved until last year when the situation became more serious. The initial dredging, done with U. S. Navy money under the supervision of the Corps of Engineers, will serve as a pilot project for civil works which will come later.

The work, under a \$1,837,866 Corps of Engineers contract, was done by Standard Dredging Corp., Los Angeles, Calif. Because of difficulties in the work, the contract was set up in two phases. Phase 1 was based

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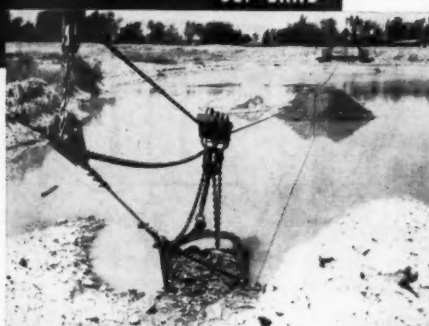


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CONTRACTORS AND ENGINEERS

On Restores Eroding Coastline

Three million cubic yards of material is placed, some of it is pumped 24,000 feet to endangered site

on a per-cubic-yard price and called for 1,200,000 cubic yards of material to be moved. The first 500,000 cubic yards, placed to meet the urgent need at Point Mugu to the south, had to be moved 24,000 feet through a pipeline and booster station from the sand trap area to a secondary feeder beach near Point Mugu. The contract price for this long-line pumping was \$0.7895 per cubic yard. The remainder of phase 1 involved a 6,900-foot pumping distance, and the contract price on this yardage was \$0.5995.

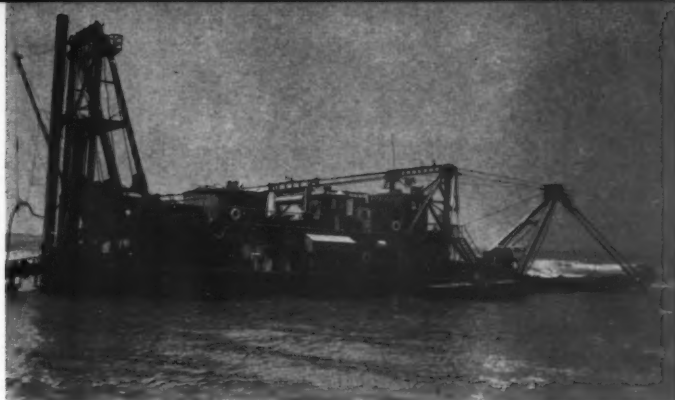
Phase 2 was set up on an equipment-rental basis, since much of the dredging was done in the open ocean where effective working time could not be gaged in advance. Here, a total of 2,800,000 cubic yards of sand

was to be moved. Equipment was rented at \$225 per hour when it was working. When weather forced the dredge to take refuge behind an earthen dike, the rental price paid was \$127. A contract clause, however, called for satisfactory production when the equipment was working.

The main dredging area in phase 1 is a strip of filled beach sand, 4,200 feet long and 200 feet wide, 280 feet west of the existing property line. The depth of the borrow area is from plus 12 feet to elevation minus-18. Pond side slopes are 1 to 10 and 1 to 15.

Phase 2, according to plans, would have consisted of a series of 11 cuts, made at right angles to the shoreline

(Continued on next page)



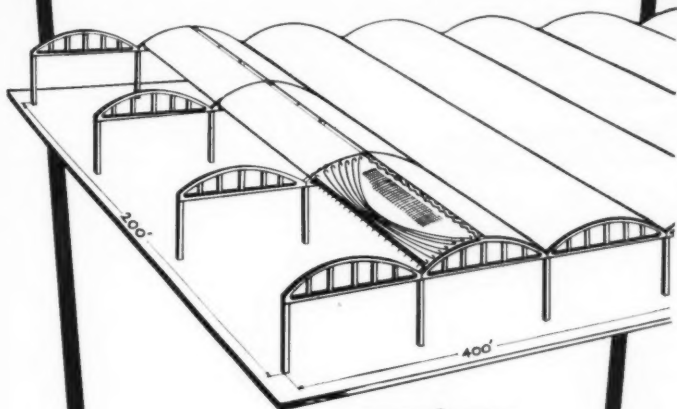
Lying to because of heavy ground swells in the open ocean, the dredge Los Angeles (above) stands ready to resume dredging work at Port Hueneme off the southern California coast. The four-vane 72-inch-diameter impeller (right) for the dredge are built up by welders. Front-end pump mounting made it possible to do this work on shore.

Ray Day Photos



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(Continued from preceding page)

and carried offshore until the elevation of the top of the dredge bank reached the natural contour of minus 10. Each cut was to be separated by an equal width of natural beach material.

Modifying this method, Standard Dredging Corp. turned the direction of the cuts northwesterly. In this way, and because of the heavy seas, the cuts overlap and extend seaward to pick up the necessary material. After several methods were proposed for starting the dredge cut, the com-

A Caterpillar tractor equipped with a side boom handles shore placement of the pipeline. Pipe was rolled to specifications of the contractor, Standard Dredging Corp., Los Angeles, Calif. Ray Day Photo

pany began to make the initial channel for its 27-inch suction dredge, Los Angeles, with the help of the 16-inch 60-ton portable dredge Beaver and some land tractor equipment.

The Beaver was assembled at a pond site excavated by tractors, scrapers, and a dragline. A water supply was maintained in the impervious material of the pond area by two Fairbanks-Morse propeller-type pumps of 24 and a 30-inch capacity.

Within 30 days after starting work, the Beaver had dredged a hole large enough to accommodate the Los Angeles. With this done, the Beaver nosed around and dredged a narrow entrance channel out to the open sea for the larger dredge. The Los Angeles was brought in quickly with the aid of a tug, and land equipment closed the dike. Digging in calm water, the Los Angeles worked 24 hours a day. A submarine line was laid across the 35-foot-deep entrance to Port Hueneme harbor so that dredged material being carried away would not interfere with water traffic.

Only one mishap marred this part of the work: damage to an air-bleeder valve caused the entire line to float to the surface. But since it came up without a single joint break and at a time when there was no harbor traffic, the line was sunk again and made watertight by a diver who replaced a few joint shingles.

Dredging and pumping material 24,000 feet to eroding Point Mugu was done on emergency schedule. To boost the output of material, a 27-inch centrifugal sand pump, built to Standard's specifications, was placed in the line 13,000 feet downshore from the Los Angeles. The pump was driven at 340 rpm by a 2,500-hp General Electric induction motor using a stepped-down 11,000 volt power at 2,200 volts. Pumping material at a line pressure of about 135 psi, the dredge averaged about 375 cubic yards per hour.

After 500,000 cubic yards of material had been placed, the booster station was abandoned and the pipeline shortened to a point just south of Port Hueneme harbor near the Naval Test and Evaluation Research Laboratory, about 6,900 feet from the dredging site. This is the area where the main feeder beach was to be located.

The rate of deposit on this part of the job reached about 1,100 cubic yards per hour. While this work was going on, and the dredge was removing water from the borrow area at a rate almost impossible for the pumps to match, a narrow channel was breached through the sand dike separating the borrow area and the open ocean in the direction of one of the first 200-foot wide cuts proposed for phase 2 dredging.

Eight hours after the cutter had gouged a 4-foot-wide channel in the dike, the force of the ocean had eroded the entrance channel to a width of 125 feet. Before erosion was checked, the channel had grown to 800 feet in width and the dredge was operating under open-sea conditions.

To maintain the sand dike created by dredging done under phase 1 of the project, conventional tractor and crane equipment worked 24 hours

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VICTOR EQUIPMENT COMPANY

ALLOY ROD AND METAL DIVISION
11440 So. Alameda St. • Los Angeles 59

For Manual Application

THIS HARD-FACING ROD	FOR THESE CONDITIONS	FOR THIS EQUIPMENT	APPLI- CATION
VICTORTUBE	Severe abrasion	Scarifier teeth, dredge cutter blades, posthole augers, oil field tools, ditcher teeth	Acety. AC-DC Elec.
VICTORTUBE "SPECIAL"	Abrasion, severe impact	Oilfield bits, rock bits	Acety. only
VICTOR TUNGSMOOTH	Thin cutting edges	Coal cutters, brick augers, pug mill knives, screw conveyors, farm tools	Acety. AC-DC Elec.
VICTORITE	Earth abrasion or sliding friction	Plowshares, cultivators, steel mill guides, cement chutes, shaft bearings, rolling mill guides	Acety. AC-DC Elec.
TUBE VICTORITE	Abrasion, impact	Plow points and farm tools	Acety. AC-DC Elec.
VICTORITE 1	Corrosion, heat, abrasion	Saw teeth, carbon scrapers, wire guides, rocker arms, steel mill applications	Acety. AC-DC Elec.
VICTORITE 6	Red heat, impact, corrosion and abrasion	Blanking, forming and trimming dies, cams, hot punches, pump shafts	Acety. AC-DC Elec.
VICTORITE 12	Heat, abrasion, impact	Saw blade inserts and other critical applications	Acety. AC-DC Elec.
VICTORITE CARBON ARC	High abrasion, thin deposit	Plowshares, lister shares, sweeps	Carb. arc Acety.
VICTORALLOY	Abrasion, severe impact	Tractor rollers, dredge pump impellers, bucket lips and teeth, rock crushers, steel mill wobblers, roll crushers	Acety. AC-DC Elec.
VICTORALLOY #1	High abrasion, medium impact	Bucket lips, rock crushers, Muller tires, gyratories	Acety. AC-DC Elec.
VICTORALLOY "A"	Angular shock, extreme impact, build-up	Clutch parts, gears, crusher plates, gyratory mantles, build-up for hardfacing	AC-DC Elec. only
VICTORALLOY "B"	Heavy impact, moderate abrasion	Tractor rollers and sprockets, shovel pads, plates, idlers, etc.	AC-DC Elec. only
VICTORALLOY "C"	High abrasion, moderate shock and impact	Tractor grousers, pressure rolls, crusher segments, roll crusher teeth	AC-DC Elec. only

Also VICTOR Bulk Metals, VICTORITE Plow Point Bars, and VICTOR Super-Titan
Blasting Nozzles

For Automatic Application

THIS TYPE	FOR THESE CONDITIONS	ON THIS KIND OF EQUIPMENT
VA #1	Abrasion, medium impact	Crusher rolls, crushers, gyratory crushers
VA #2	Abrasion, impact, Multi-pass application	Steel mill applications
VA #3	Abrasion, light impact	Mill guides, crushers, dredge bushings
VA #4	Multiple layer build-up	Tractor rails, crane wheels, general build-up
VA #5	Heavy impact, abrasion	Tractor rollers, idlers, mine car wheels, sheave wheels
VA #6	Medium abrasion, high impact	Crane wheels, drums, roll necks
VA #7	Abrasion, high impact	Build-up for hardfacing
VA #8	Abrasion, medium impact	Dozer bits, roll crushers, scraper blades
VT #60	Extreme abrasion	Tool joints, grader blades, scraper blades, augers

(Also Mfrs. of welding & cutting equipment, blasting nozzles)

844 Folsom St., San Francisco 7 3221 Santa Fe Ave., Los Angeles 58

H-11

a day. Two Caterpillar DW21's, six 15-yard Caterpillar scrapers and D8's, three Cat D8 dozers, and two International TD-24's were used first. Later, a Northwest dragline with 2½-cubic-yard Hendrix open bucket and a Cat D8 U-type dozer helped slow the rate of erosion.

Maintenance of this earth and sand dike as a temporary break-water provided the Los Angeles with a place of refuge during heavy seas. Dredging was often hampered by ground swells on flood tides. And while winds often flattened the swells, only once—during a period of brisk windy weather—was the dredge able to operate 24 hours a day for five days. Dredged material was deposited in a spoil ground south of the Port Hueneme harbor entrance. Caterpillar tractors and Trackson side booms handled most of the 20-foot steel shore-pipe sections, which were manufactured to Standard's specifications.

Because of the restricted dredging area on part of the job, the dredge laid only a small amount of floating pipeline. The 1,100 feet used consisted of conventional line with Kinco ball joints mounted in 40-foot sections on catamaran-type pontoons. Although short, this pipeline was extremely vulnerable to heavy seas. Heavy strongbacks were used to protect each pontoon section. The front port and starboard swing hoists each contained 600 feet of 1¼-inch swing cable and each swing anchor had several hundred feet of temporary tagline. This length was sufficient to enable the dredge to move into the lee side of the sand dike without moving a swing anchor.

Dredge is Powerful

The hull of the Los Angeles, 157 feet over all, has a total length of 203 feet with the ladder and cutter at 30-foot dredging depth. A conventional cutterhead-type rig, it uses either anchor lines or a tug for maneuvering. Its main power plant consists of a 2,500-hp Elliott induction motor, cooled by an air blower so that it can deliver up to 5,000 hp. Shore electric power, brought to the dredge by transmission lines and a 3,000-foot submarine cable, is transformed down to 2,200 volts before going to the motor. Mounted amid-ship is a 600-amp 3-phase 60-cycle motor which runs at 360 rpm.

The dredge pump, built to the company's specifications, has a 30-inch throat and discharge and carries a four-vane 72-inch-diameter impeller which turns at about 340 rpm to move sand through the intake pipe. The main pump is mounted at the front of the hull and can be serviced or removed easily. An inspection manhole, just forward of the pump intake, is serviced by a small Coffing hand hoist. A heavy boom with a 10-part set of blocks and cable is used for removing the impeller or pump parts.

The cutter ladder assembly is 71 feet long and weighs 80 tons with the cutter motor and gear reduction case in place. Electric power for the cutter shaft comes from a 600-hp motor which has a gear-reduction box to cut power down from 585 to 26 rpm. Auxiliary power includes a 200-hp electric winch motor and a Caterpillar 165-hp diesel standby engine and generator set. Digging spuds on the rig are 72 feet long

Sea conditions permitting, the dredge operator keeps maximum yardage flowing through the pipeline.

Ray Day Photo



and 30 inches in diameter, and are made of hollow steel.

Field operations at Port Hueneme were under the general supervision of Job Superintendent M. V. Wheeler and Dredge Captain G. E. Nolan. Chief engineer on the Los Angeles is Arne Thronsdon.

Col. Arthur H. Frye Jr., has general supervision of all work under the Corps of Engineers. District engineer for the Corps is William J. Leen, chief of Construction Division.

THE END

Why CAT Motor Graders STOLE THE SHOW on the West Virginia Turnpike



It took a lot of heavy equipment to cut the West Virginia Turnpike out of 88 miles of mountain south of Charleston. Moving some 31,000,000 cubic yards of earth were over 1500 units of all kinds, involving scores of contractors. More than a dozen of these contractors had motor graders on the job—39 of them. And 33 of the 39 were Caterpillar Motor Graders—like the No. 12 pictured, helping finish one 5-mile section of the Turnpike for Oman Construction Co. of Nashville, Tenn.

There are any number of reasons for this overwhelming preference for the Cat Diesel Motor Grader.

For one, it's built and serviced entirely by one organization—engine, transmission, frame and circle assembly, and controls. It's carefully balanced—power with weight and speed. Its constant mesh transmission shifts easily and fast—in the case of the No. 12, through working speeds from 2.3 to 19.3 m.p.h.

The operator can call on a full range of blade positions without leaving the platform. His vision is not obstructed by either the blade-lift mechanism or the blade-lift gears. And he finds Caterpillar mechanical power controls act as fast as he wants them to on high-speed jobs.

Another point: your Caterpillar Dealer is always ready with prompt, genuine parts service. He'll be glad to show you in detail what makes this big yellow machine so popular. Ask for a demonstration today.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.



CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**99% OF ALL CAT
MOTOR GRADERS EVER
BUILT ARE STILL IN USE**

Hollow Precast Arches Support Ro



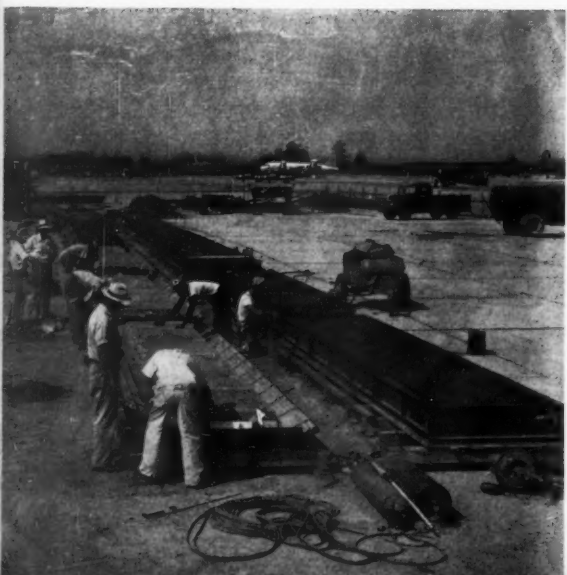
Two 12-inch and two 4-inch Sonovoids are assembled in a template to provide the interior form for the hollow arches. After the tubes are tied together with metal bands they are set into the arch forms.

C&E Staff Photo



The 22½-ton half-arches are precast on this timber ramp. Ready-mix concrete which attained 5,000-pound strength in 28 days was used in the pour. Note the metal inserts at the top of form which will be used later to weld roof panels to the arches.

Official U.S. Navy Photo



Concrete molds with hinged steel sides are prepared for the pouring of a batch of ribbed roof panels. A mat of wire-mesh reinforcing has been placed in the form at right, which is set for a pour. In the left line, workmen have stripped the side forms from a completed slab.

Official U.S. Navy Photo

THE U. S. NAVY's unchallenged lead in the field of precast-concrete construction was broadened this spring as twelve big concrete arches were set in place across a 150-foot hangar span at the Oceana Naval Air Station in Virginia.

Similar jet maintenance hangars, designed from two originals at Miramar Naval Air Station in California, are under construction in several parts of the country.

At Oceana, both steel and concrete bids were submitted, but the steel bid was only slightly lower. Because decreased maintenance costs were anticipated, the job was awarded in concrete. The work was done by Virginia Engineering Co., Inc., Newport News, Va., for \$2,100,000.

To improve efficiency, the Navy has standardized the design of the jet maintenance hangar. To date, five have been built of steel and two of concrete. In most cases, alternate bids were asked and steel came out slightly lower. At Whidbey Island, Wash., however, only a concrete bid was requested.

Design

The standard hangar consists primarily of twin barrels, 150 feet wide and 260 feet long, connected by a 120-foot-wide central shop area. At Oceana, the precast arches are supported by heavy concrete abutment bents 40 feet high, 32 feet wide, and 24 feet apart. These bents also form the frame for carrying the 2-story office sections on the outside of the barrel.

Doors are hung from steel box trusses which provide 40 feet of vertical clearance. Crane runways suspended from the arches 50 feet in from each bent also maintain 40 feet of clearance.

Hollow Arches

The hollow precast arches are fixed at the ends and hinged in the middle. They are 3 feet deep, 1¾ feet wide, and rise parabolically 30 feet above the abutments. Maximum reinforcement is ten 1½-inch-square bars at the top and bottom.

For erection purposes, the half-arches were hinged at each end. Some time after the full dead load was applied, the hinged ends were converted to fixed ends by welding the reinforcing and incasing the entire section in concrete.

The roof consists of precast-concrete thin-shell panels 24 feet long and 4 feet wide. The panels have 10-inch-deep ribs and a 1¼-inch-thick shell reinforced with wire mesh. For design purposes, the live roof load was estimated at 20 pounds

per square foot and the wind load at 25 pounds per square foot.

Because of the local soil conditions, all of the abutment frames were founded on deep concrete footings supported on Raymond step-taper piles. Up to 16 piles 60 feet long were driven for each footing. And to counteract the thrust from the arches, about three-fourths of the piles were battered outward on a 2½ to 1 slope.

The heavy abutment frames were constructed in a conventional manner, using prefabricated form panels and snap ties. Ready-mix concrete was placed with a 2-yard laydown bucket that was handled by a P&H crane.

Casting the Arches

Casting the hollow arches, however, presented some special problems. To simplify the erection, the contractor cast the half-arches in a vertical position on a timber ramp. To make the required hollow inside the arch, he tied two 12-inch and two 4-inch Sonovoid tubes together with steel bands. With the four tubes tied together so that each small tube was tangent to both large tubes, space was provided for the required 5-inch concrete cover at the top and 3-inch cover on the sides. The paper tube assembly was laid out flat on a template, tied together, lifted by a crane, and set inside the forms on the ramp.

After the forms were set, ready-mix concrete (5,000-pound strength in 28 days) was placed inside, finished, and covered with Sonneborn cure. Ten days later the 22½-ton unit was stripped, lifted from the ramp with two lines, and stockpiled. Only one ramp was used to cast all of the 24 half-arches, two at a time.

Erecting the Arches

When the abutment frames were completed and the floor slab poured, the contractor turned to the ticklish job of erecting the huge arches. He decided to set up the steel box truss first to provide a means of bracing the arches. After this was done, he moved in three Bay City 25-ton truck cranes to handle the erection.

At the stockpile, the first half-arch was lifted onto two low-bed trailers, one at each end. It was then hauled to the hangar, and raised by two of the truck cranes until the hinge of the base was connected to the opposite hinge on the abutment.

The crane closest to the crown of the arch held its position as the other released its lines and moved over to assist the third crane in the

on Roof for Hangar

Huge concrete spans are cast in two sections, erected in tricky operation at site of new navy jet facility

erection of the opposite half-arch. When the base hinge on the second half-arch was connected, the two middle cranes lowered the crown ends of both arches until the third hinge was connected. The completed arch was then braced against the box truss, the second arch erected, and the two tied together with precast roof panels.

This erection procedure was also used on the Whidbey Island job, except that the arches were precast on their sides instead of in a vertical position.

Precast Roof Panels

The thin-shell roof panels also involved a major precasting setup. A total of 924 panels was required, including 20 with sloping overhangs.

The precasting was started several months before the erection, and it was not necessary to turn out more than one batch of 14 panels a day. All of the thin-shell ribbed panels were cast on concrete forms using the methods of Vacuum Concrete, Inc., of Philadelphia, Pa.

Every morning the hinged steel side forms were stripped and the panels lifted by vacuum mats and stockpiled. As soon as each panel was removed, workmen reset the steel sides, placed the mat of wire mesh, and poured the concrete. Berg hand vibrators were used internally as a vibrating screed finished the surface. The 4 x 4-foot suction mats were then laid side by side on top of the fresh concrete. They were each connected by a 1-inch vacuum hose to an outlet on a manifold which ran back to a gasoline-powered vacuum pump. About 3 minutes of processing removed the excess water from the concrete, thus accelerating the set without any loss of strength.

The complete precasting operation was finished by this time, allowing the panels to cure until the next morning.

Personnel

W. A. Hancock was superintendent for the Virginia Engineering Co., Inc. The designer was W. W. Slocum & Co., Newark, N. J. The basic concept of framing and schematic design was by A. Amirikian, chief designing engineer of the Navy's Bureau of Yards and Docks. The original design, elaborated by Kistner, Curtis & Wright, Los Angeles, Calif., was modified to fit this job by Slocum.

Capt. A. J. Fay, CEC, public works officer for the Fifth Naval District, was in charge of construction on the project.

THE END

Two Bay City truck cranes lift a half-arch into place across the hangar. After the hinge of the base of the arch is connected to a hinge on the abutment, the crane in the background moves out and assists with raising of the opposite half-arch.

Official U. S. Navy Photo



Here the other half of the arched beam is raised by two cranes. The crane at the extreme right supports the crown end of the first half-arch, which is hinged to the abutment. Workmen on the abutment at left prepare to secure the second half-arch.

Official U. S. Navy Photo



Supported at their crown ends by the cranes, the two halves of the arched beam are lowered until they meet at the center. Here workmen connect the center hinge. The box truss will support the arch until roof panels tie it to the previously erected arch.

Official U. S. Navy Photo



No Maintenance Necessary

To the Editor:

Although we enjoyed "Hydraulic Jacks Lift Slip Form for Tower" in the July issue of *CONTRACTORS AND ENGINEERS*, there is one rather important point which should be made clear. This is in reference to the statement that the interior and exterior surfaces of the tank were sandblasted, treated, primed, and painted.

We wish to bring to your attention the fact that one of the major advantages of a concrete water tank is that it is maintenance-free. The maintenance of a steel tank is quite high and should be taken into account when comparing the costs of these two methods of construction. Also, the initial cost of large concrete tanks is usually lower.

Nothing was done to the interior of the tank, nor will anything ever be done. The exterior of the tank was painted to give it a more pleasing appearance, but no further painting is necessary because concrete does not rust.

Very truly yours,
Richard N. Whittle
Whittle Construction Co.
P. O. Box 5602
Dallas, Texas

Improved Fabric Used In Earthmover Tires

■ Nygen fabric, reported to be high in resiliency, and in resistance to impact breaks and bruises, is now being used in the manufacture of all giant earthmoving tires produced by The General Tire & Rubber Co., Akron, Ohio. Tire carcasses made of the fabric are also claimed to have better resistance to deterioration caused by water absorption.

The conversion to Nygen in giant tires covers the company's line of off-the-road tires in sizes ranging from 12.00 x 20 to 27.00 x 33.

For further information write to the company, or use the Request Card at page 18. Circle No. 297.

Hard-Surfacing Rod

■ Literature on a hard-surfacing welding rod is offered by Coast Metals, Inc., 201 Redneck Ave., Little Ferry, N. J. Containing molybdenum, boron, and iron, the No. 170 electrode is available in 1/4 x 11-inch coated electrodes. It can be welded on steel in the low to medium-carbon range to resist abrasion and impact.

Cast iron provides a fair base where impact is not a problem, while manganese does not. The hard-surfacing can resist abrasion in applications that handle clay, sand, and nonmetallic minerals.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 209

Corps Offices Relocated

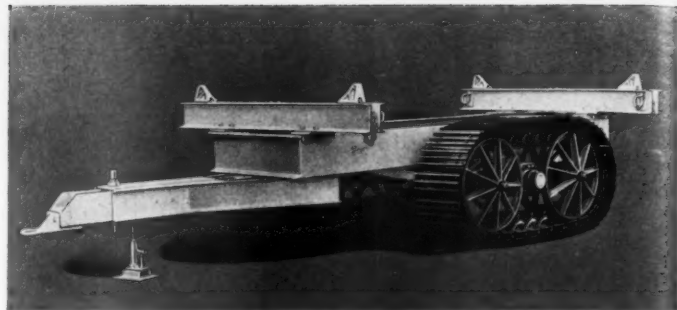
Offices of the Great Lakes Division, U.S. Army Corps of Engineers, at Chicago have been moved from 1660 E. Hyde Park Boulevard to the Rand McNally Bldg., 536 S. Clark St. The move results from incorporation of the Rock Island, Ill., and St. Paul, Minn., districts in the division, which has been renamed the North Central Division.

The Athey Universal Forged-Trak trailer with 8-foot bunks for hauling long loads of steel, pipe, and other materials.

Track-Mounted Trailer

■ A track-mounted trailer that can haul any heavy and bulky load over terrain commonly traveled by a track-type tractor has been developed by the Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill. The Universal Forged-Trak trailer is available with several component parts that can be interchanged to convert the unit for specific needs.

The basic trailer frame of struc-



tural steel, with cross bracing of channel and angle sections, is equipped with an adjustable drawbar that can be set at any of three lengths to match load lengths. A hydraulic jack is offered as optional equipment for connecting and disconnecting the trailer from the tractor.

The five sizes of Forged-Trak trailers range from 6 to 30 tons. Bunks are offered for handling loads up to 30 feet long. Two trailers combined can haul loads up to 56 feet long.

For further information write to the company, or use the Request Card at page 18. Circle No. 172.

Introducing the Brand-New

OLIVER SUPER 55

the all-new, all-purpose tractor with

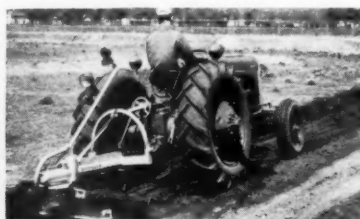


Takes all equipment...
front, rear or side-mounted!

The built-in hydraulic 3-point hitch operates a wide choice of Oliver and other simple, low-cost tools. And the solid, one-piece frame on the Super 55 makes a convenient foundation for front- or side-mounted equipment.



Hydraulic or mechanical mowers



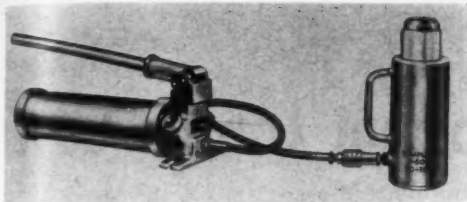
Rear-mounted 6-foot scraper

Other attachments include

Rotary and reel-type mowers
Rear crane lift
Lifting boom for loaders
Post hole diggers
Rear-mounted hydraulic backhoe

Rear-mounted post driver

General-purpose and weed sprayers



This new Simplex jack can be used in close quarters.

New Hydraulic Jack With Remote Control

■ A new 50-ton remote-controlled hydraulic jack has been announced by Templeton, Kenly & Co., 2523 Gardner Road, Broadview, Ill. Consisting of a hydraulic ram, a high-pressure connecting hose, and a pump, the newest Simplex jack can be used in confined quarters under loads with minimum clearance, and in other locations where the safety and convenience of remote operation

is desirable. It is recommended by the manufacturer for use as a hydraulic press, and for use in lifting and lowering heavy machinery, lifting and aligning beams, and straightening equipment.

The ram has a minimum height of 10½ inches and a 5½-inch lift. For faster operation, the pump has an automatic switch-over which permits rapid positioning of the unload-

ed ram, and low-speed pumping when the ram lifts the load. A safety by-pass valve prevents overloading.

For further information write to the company, or use the Request Card at page 18. Circle No. 252.

Use of Calcium Chloride For Unpaved-Road Upkeep

■ Maintenance tips for unpaved roads is the topic of a revised booklet from the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C. The booklet explains how to get the best results from the use of calcium chloride on such roads. Separate sections of the booklet deal with normal maintenance operations, and specific questions and tables are included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 269.



Mobile Folding Towers

■ A new series of truck-mounted high-lift personnel towers has been placed in production by Mobile Aerial Towers, Inc., 1405 N. Clinton St., Fort Wayne, Ind. The Series 3 and 4 Hi-Ranger are designed to place a worker at maximum platform heights of 32 feet and 40 feet, respectively.

Series 3 can be mounted on any ¾-ton or larger pick-up-type utility or industrial truck such as the fork-lift variety. The Series 4 can be similarly mounted on 1½-ton or larger trucks. No major alterations need be made to the truck.

Booms are constructed of seamless steel tubing, with all power furnished by a hydraulic system powered by the vehicle's engine. Retractable hydraulic outriggers provide stability and make possible platform weight capacities of 250 pounds for the Series 3, and 300 pounds for the Series 4.

For further information write to the company, or use the Request Card at page 18. Circle No. 309.

Carbide Drill Bit

■ A new carbide-inserted drill bit is announced by Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. The Whirli-Bit is used to drill plug holes in stone quarries, expansion bolt holes for setting machinery, roof-bolt holes in mines, and pin holes in construction stone work for lewis pins.

This type of bit is furnished in four sizes: a ¾-inch size with either 4 or 6-inch drilling depth, and a 1½-inch size with either 4 or 6-inch drilling depth. Other lengths and sizes are available.

For further information write to the company, or use the Request Card at page 18. Circle No. 198.

Selecting Wire Rope

■ A booklet on the selection and maintenance of wire rope for contractors is available from the American Cable Division, American Chain & Cable Co., Inc., Bridgeport, Conn. The literature recommends the best type of wire rope for each use in the construction industry. It also provides information on the proper care of wire rope so that the working life of lines may be increased.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 215.



Universal frame for dozer blades, snow plows



Rear fork lift carrier



All-purpose, 7-cubic-foot scoop

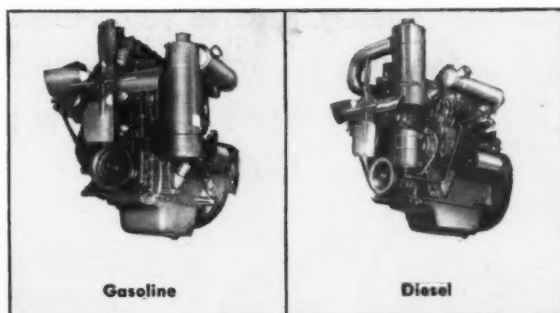


tor with everything!



Here is the tractor you have been waiting for. A tractor with all the features you have wanted...all the features that make other tractors its size outdated! Waiting for diesel power? Super 55 has both diesel and gasoline. Want a tractor you can use anywhere, with any kind of attachment? Try the Super 55...its greater power, weight...its compact, maneuverable size...and its ability to take front-, rear- or side-mounted tools gives you versatility never before had in any tractor! Just look—

SIX FORWARD SPEEDS—with a new super low of 1½ miles per hour. Gives greater power at slow speeds, less chance of engine stall-out. Straight-through shift from first to reverse low—makes quick reversing easy.



Gasoline

Diesel

Most powerful tractor of its type!

Not only the most powerful, but a huskier, heavier tractor and the *only one* to offer a choice of diesel or gasoline power. Two modern, low-friction, 4-cylinder engines designed to keep your costs at an absolute minimum. Now you can pick the power that fits your needs the best and cuts your costs the most!

LOW AND COMPACT—only 4½ feet high. Built low to the ground for stability, yet has a 21-inch axle clearance. 6-foot wheel base makes tight turns easy in close quarters.

BUILT-IN HYDRAULIC SYSTEM—internal control for 3-point hitch equipment. External control for mounted equipment. Mounted and 3-point tools may be operated together or separately without closing either system.

DOUBLE-DISC BRAKES—give four times the braking surface, yet require half the foot pressure of band brakes. Sure, safe, positive braking forward or back.

EASY STEERING—recirculating ball-type steering mechanism reduces operator fatigue. Makes steering in soft ground tight and maneuvering much easier.

See it, drive it, learn the facts!

Stop in at your Oliver Industrial Distributor. Look this new tractor over. Get behind the controls and give it a try. You'll like the profit-making features of this high-performance, powerful Oliver Super 55. See it today!



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400 W. Madison Street
Chicago 6, Illinois
Please send free illustrated catalog on the new Super 55 Tractor.

1-8

Name.....
(Please Print)
Company.....
Address.....
City.....Zone.....State.....



After making a dry-mix run, a Seaman Trav-L-Plant wet-mixes the base material and the cement. A truck supplies water to the machine, which applies the required moisture to the course in one pass.

To GIVE PART of its southern access route to Yellowstone National Park the best design possible within economic limits, the Idaho Department of Highways recently turned for the first time to the use of a

cement-treated base and the mixed-in-place method. The 9.989 miles of paving involved a critical 152,000-square-yard cement-treated processing item which was bid for only 28 cents per square yard—well under

the 40-cent price often paid for similar work. The job itself is located between Arimo and Downey on U. S. 91, a section where traffic counts are about the same as on U. S. 30, Idaho's principal east-west route.

Carl E. Nelson Co., Inc., Logar, Utah, hurried the \$374,026.80 job under a 90-day rush schedule. Specifications called for pulverization of a temporary bituminous surface, production and installation of 49,500 tons of new base material, the installation and processing of 152,000 square yards of cement-treated base, the construction of a 24-foot hot-mix asphaltic concrete pavement, and a surface seal coat of asphalt and rock chips.

With the exception of 1,200 feet in a particularly unfavorable soil and a 3/4-mile section through the town of Downey where curbs and gutters were built, the job was typical. Since only a few rolling hills are situated in this level prairie country, job specifications called for fill slopes of 4 to 1 up to 6 to 1. All cut slopes were 6 to 1.

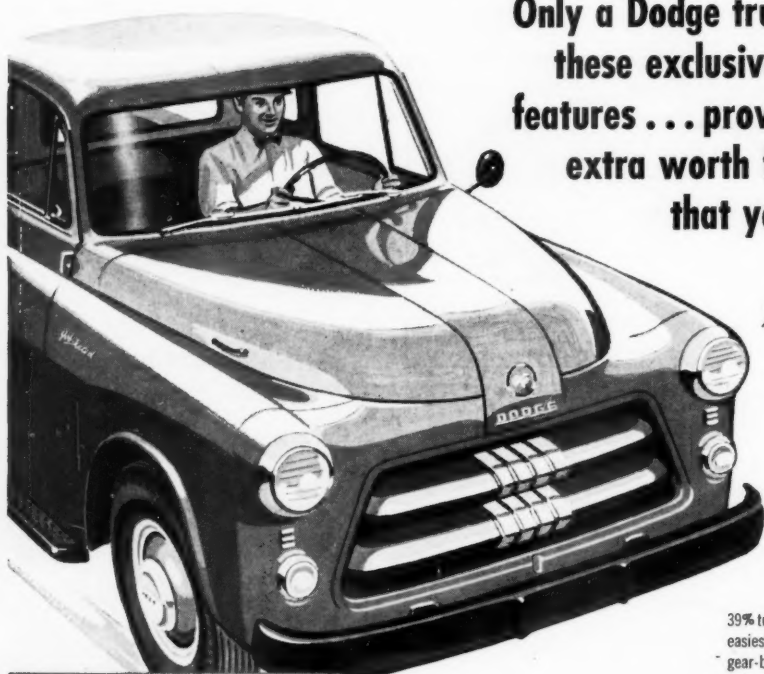
The roadbed constructed two years ago under a separate contract was 60 feet wide, and Nelson's contract continued this earthwork. Topped at the time of its construction by select borrow subbase for a width of 58 feet and a 9-inch thickness, this road was finished with a light bituminous surface treatment. This allowed the base to settle and cure while it was open to traffic.

Old Asphalt Pulverized

Nelson's improvement consisted of scarifying and pulverizing this surface, then continuing with stage con-

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features... provides so much
extra worth for the low price
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Famous Power-Dome V-8's with unique dome-shaped combustion chambers for top power and efficiency! Full line of thrifty time-proved 6's, too! 6 great engines in all—103- to 172-horsepower!

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39° turning angle—for sharpest turning, easiest parking of any truck! Plus new gear-before-axle steering system that helps absorb road shocks, cuts driving fatigue to a minimum!

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Biggest windshield in the popular truck field—951 sq. in. in size! Most total vision area, too, with a full 2261 sq. in.! You see more from every angle in a Dodge truck!

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Widest, roomiest cab interior of them all—with 61 3/4" of hiproom, 58 3/4" of shoulder-room! Deepest easy-chair seat—with 86 soft super-cushion coil springs!

★ Plus biggest savings

Power-Dome V-8 design gets more miles from every gallon of regular gas, stretches your fuel dollars! And Dodge truck quality engineering saves you even more money in long life, low maintenance!

SEE YOUR DEPENDABLE DODGE TRUCK DEALER TODAY!

HOW YOU CAN GET
the world's most
powerful low-tonnage
truck engine...

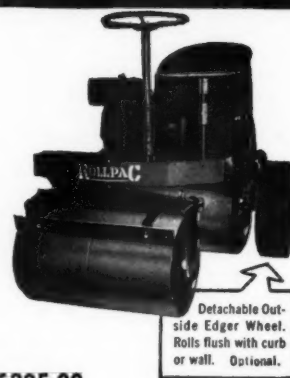
**NEW 145-HP.
POWER-DOME V-8**

for 1/2- through 1-ton
pick-ups, panels, and stakes

Added proof...

that there's a better deal for the man at the wheel... with new

DODGE "Job-Rated" TRUCKS



\$895.00

A Standout Popular-Priced
One Ton Roller. Send for
Catalog.

SOILAIRE INDUSTRIES

Minneapolis 3, Minnesota

Sold by over 75 distributors in United States and Canada

CONTRACTORS AND ENGINEERS

**Mixed-in-place method is used
for the first time by Idaho Highway
Department on stretch of U. S. 91**

struction. The latter included a 26-foot-wide and 6-inch-thick course of $\frac{3}{4}$ -inch minus cement-stabilized subbase, 8-foot-wide shoulders on both sides prepared with $\frac{3}{4}$ -inch minus gravel, the 24-foot-wide and 2-inch-thick plant-mix pavement, and the seal coat.

The old asphalt cake was of low grade road-mix construction and had worn well. To scarify and pulverize this material, and to secure high standards on the cement-treated base, Nelson brought in a new Seaman Pulvi-Mixer and a Seaman self-propelled Trav-L-Plant. The rigs, working with a Caterpillar No. 12 motor grader, handled about a mile of pulverization daily.

Base Construction

Base-course materials were produced in two crushing plants, an H. K. Imperial and a Cedarapids junior tandem. Each plant, capable of turning out $\frac{3}{4}$ -inch maximum material at a rate of 175 to 200 tons per hour, were sent in at several pit sites throughout the job. Material for the cement-treated base course was crushed to the following specifications:

Screen Size	Per Cent Passing
$\frac{3}{4}$ -inch	100
$\frac{1}{2}$ -inch	45-70
No. 10	25-45
No. 200	10-20

Aggregates for asphaltic concrete mineral filler and for the shoulder aggregate were:

Screen Size	Per Cent Passing
$\frac{3}{4}$ -inch	100
$\frac{1}{2}$ -inch	50-70
No. 10	30-50
No. 200	5-12

Hauled to the road by a fleet of Ford, International, and Chevrolet

dump trucks, the material was spread by a shop-built windrow machine. Four windrows contained enough material for the 6-inch-thick and 27-foot-wide course. Segregation of fine and coarse particles during haul-

ing and windrowing was corrected by the Seaman machines.

The mixing of the cement-treated base followed a rigid schedule. The job, hampered by showers between 3 and 4 o'clock almost every after-



A Flynn automatic spreader applies cement to the aggregate while a Seaman Trav-L-Plant and Pulvi-Mixer blend the materials and a Buffalo-Springfield roller compacts the base course.



"Black-Topper" covers gravel windrow on road-mix job near Fenton, Mo. Road grader follows distributor.

Pumping asphalt to stabilize pavement subgrade.

Etnyre proves itself to Missourians!

"I'm from Missouri" holds true when it comes to buying bituminous distributors, too. Investigation by Missouri Petroleum Products of St. Louis, Missouri indicated that the Etnyre "Black-Topper" would do the best job. Five years' experience has proved the buying decision was right.

Even distribution, ease of operation, simplicity of control, and maneuverability are factors which make the Etnyre a superior machine, in the opinion of Mr. F. L. Hunter, plant

superintendent. The firm has found the "Black-Topper" particularly suitable for pumping heavy asphalt under broken or fallen pavement to stabilize the concrete subgrade.

Be "from Missouri" yourself. Check into the many operating advantages of the Etnyre design. Find out why it's the favorite of operators everywhere. Satisfy yourself that the "Black-Topper" offers you greatest value for your dollar. See your Etnyre dealer or write E. D. Etnyre & Co., Oregon, Illinois, U. S. A.

SEE YOUR ETNYRE DEALER

ETNYRE
"Black-Topper"
BITUMINOUS DISTRIBUTORS



MORE RUGGED!
NEW LUG-ALL
WINCH HOIST

The trusty, husky, LUG-ALL Winch Hoist is now more rugged than ever. Newly designed, job-tested models enable the LUG-ALL to meet new, even more challenging requirements.



1 1/2 TON CAPACITY

The feather weight LUG-ALL lifts, lowers, pulls, bends, stretches or tightens up to 1 1/2 tons! LUG-ALL works easily around corners. It is truly the "vest pocket" hoist for contractors and builders. Among its 1,001 uses are:

- Stretching Steel Mat Floors
- Connecting Slip-Joint Pipes
- Pre-Tensioning Steel Rods
- Tightening Conveyor Belts
- Replacing Cots on Shovels & Dozers

WEIGHS 9 LBS.

Newly designed aluminum frame protects ratchet teeth from rough surfaces. Has 133 strand, pre-formed, galvanized aircraft cable. Oiled-for-life bearings, too! Stainless steel springs. LUG-ALL SAFETY HANDLE prevents overload. Your LUG-ALL is factory tested before shipment and guaranteed for one year. Order today, or write for detailed bulletin.

MODEL #3000 HD
\$35.25 fob

Also available in rust-resistant, corrosion-resistant MARINE type models with stainless steel cable at slightly higher prices—every part is salt spray tested.

THE LUG-ALL CO.
WYNNEWOOD 2, PENNA.

noon, made it necessary for the contractor to start work early in the morning in order to be able to finish a section.

The day's work started with a Flynn automatic spreader applying cement to the 700-foot-long section staked out early in the morning. Eagle brand Type II bulk cement was hauled in by truck from the commercial plant at Inkorn, 15 miles away. The Flynn machine protected the cement until it was in place so that none of it was blown away in the moderate-to-strong winds.

Just behind the spreader, the Seaman Pulvi-Mixer and Trav-L-Plant, capable of mixing laterally as well as longitudinally, each made a dry run through the material, producing good results. This was followed by a wet-mixing run by both machines. The Trav-L-Plant, with its precise

metering device, applied the required amount of moisture in one pass. Moisture content was determined by a state laboratory crew which worked closely with the lead machine. A single pass with the Pulvi-Mixer was sufficient to complete the mixing job. About 3,000 linear feet of mixing was a daily average, although the crew hit as high as 4,000 feet. Tine wear on the machines was not excessive. Of the 16 sets of tines ordered for the job, only 10 were used.

Compaction was relatively easy for the 4 rollers following the mixing equipment. Rollers included 2 Flat Iron pneumatics with 5 rubber tires, 2 Gallions, and a Buffalo-Springfield machine.

Although state specifications called for 95 per cent of modified AASHTO density, the average range was from

97 to 100 per cent. Maximum densities went as high as 103 per cent.

Light sprinklings of moisture kept the cement-treated base alive until a seal coat of Utah Emulsions Co.'s RS2 emulsified asphalt was applied by a Littleford distributor.

One of the refinements in finishing out the base had motor graders develop a beveled edge along both sides of the 26-foot strip. This eliminated the sharp break between the cement-treated course and the gravel shoulders which engineers believed would tend to produce a surface crack in the bituminous concrete. After being shaped by the motor grader, the edge was rolled tight. Four to six sections were processed in a 10-hour day while the job was in progress.

Plant-mix asphalt for the surface course was produced by a Madsen 5,000-pound batch plant set up near

the center of the project. After the asphalt mix had been laid by a Barber-Greene finishing machine, it was compacted by the steel-wheel rollers used on the base course.

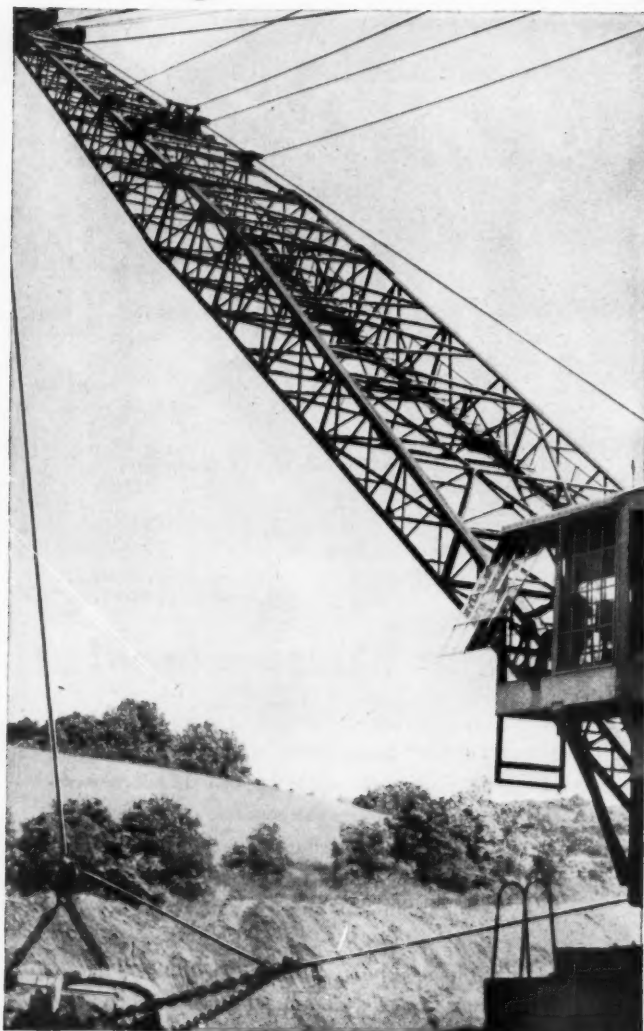
Personnel

General superintendent for Carl E. Nelson Co., Inc., was N. E. Parsons. Sam Gillette was project superintendent, and Norman B. Jones, superintendent of cement-treated base construction. For the Idaho Department of Highways, A. D. Rounds is resident engineer under C. A. Kelly, district engineer of District 1, Pocatello. The job was designed and supervised under E. V. Miller, state highway engineer, with P. E. Oxley, construction engineer.

THE END

TROUBLE-FREE SERVICE around the clock from Tiger Brand Drag Rope

The Right
Wire Rope
will do
the trick!



ASSURE YOURSELF of good service from your wire ropes—consult an American Wire Rope Engineer regularly.

ONE of the largest coal companies in Pennsylvania gets excellent service from Tiger Brand Wire Rope. On this big dragline, for example, 2 1/4" Tiger Brand Drag Rope lasts for 8 to 12 weeks, and 1 3/4" Tiger Brand Hoist Rope lasts 4 to 6 months. This is good service, because these ropes work 24 hours a day, 6 days a week, every week of the year.

As a result of consistently good service records like these, many such operators use Tiger Brand Wire Rope exclusively on all their excavating machinery.

Like hundreds of other companies that do a lot of excavating, you will find that once you start using Tiger Brand Wire Rope, you keep down rope costs, keep down rope trouble, and keep on using Tiger Brand.

For a list of Tiger Brand Wire Ropes and the jobs each one can do best, send the coupon.

FREE ROPE BOOKLET

American Steel & Wire
Dept. O-94, Rockefeller Building
Cleveland 13, Ohio

Please send me, without obligation, a copy of your helpful wire rope selection guide, "The Right Rope for the Job."

Name
Company
Address
City & State

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellent Performance



UNITED STATES STEEL

Adapt Filters for Nonflammable Fluids

■ All models of its sump and line-type filters have been adapted for use in the filtration of all types of nonflammable hydraulic fluids, according to the Marvel Engineering Co., 625 W. Jackson Blvd., Chicago 6, Ill. No changes have been made in the basic synclinal design. Marvel synclinal filters are available in capacities from 5 to 100 gpm, and greater capacities can be attained by multiple installations.

Both sump and line types may be easily disassembled, cleaned, and reassembled. The line-type filters operate at full efficiency in any position and may be serviced without disturbing pipe connections.

For further information write to the company, or use the Request Card at page 18. Circle No. 301.

Tractor-Servicing Tools

■ A new service manual, illustrating factory-approved service tools for Allis-Chalmers industrial tractors, has just been issued by the Owatonna Tool Co., 381 N. Cedar St., Owatonna, Minn. This manual shows actual shop and field service operations, gives the approved procedure to follow, and lists the proper tools to use in each instance.

Service jobs for which tools were not formerly available are also illustrated. Jobs such as drive-sprocket removal, pivot-pin removal and installation, and steering-clutch spring compression are covered.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 191.

STANDS UP TO SEVERE USE and even abuse



One word describes a Hayward — ruggedness. Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church Street, New York 7, N. Y.



HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES
famous for performance since 1888

CONTRACTORS AND ENGINEERS



New Wheel Tractor

■ A new four-wheel adjustable-tread-type tractor is announced by the Oliver Corp., 400 W. Madison St., Chicago 6, Ill. There is a choice of two new engines for the Super 55, a gasoline tractor engine with a compression ratio of 7.0 to 1 and a full-diesel engine. A six-forward-speed transmission includes a super-low gear that makes it possible to travel as slow as $\frac{3}{4}$ mph.

Wheelbase of the Super 55 tractor is 73 inches, and hood height is less than 51 inches. The front and rear-wheel tread is adjustable from 48 to 76 inches, and rear-wheel rim diameter is 28 inches. The unit weighs 3,000 pounds.

An internal hydraulic system is standard, and an independently controlled power takeoff is available as special equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 278.

Data on Traffic Guides

■ Highly visible traffic cones of rubber are illustrated in literature from the Radiator Specialty Co., 1700-1900 Dowd Road, Charlotte 1, N. C. The Safe-T-Cones, which have a square base and a low center of gravity, are used as emergency barricades during road construction and for such maintenance jobs as painting traffic lines. They are offered in sizes 18 and 28 inches high.

Special signs with warning messages are available for mounting on top of the cones. The cones are available with either a painted or reflectorized surface.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 214.

SASGEN

New
Electric-Powered
CHAMPION

DERRICK



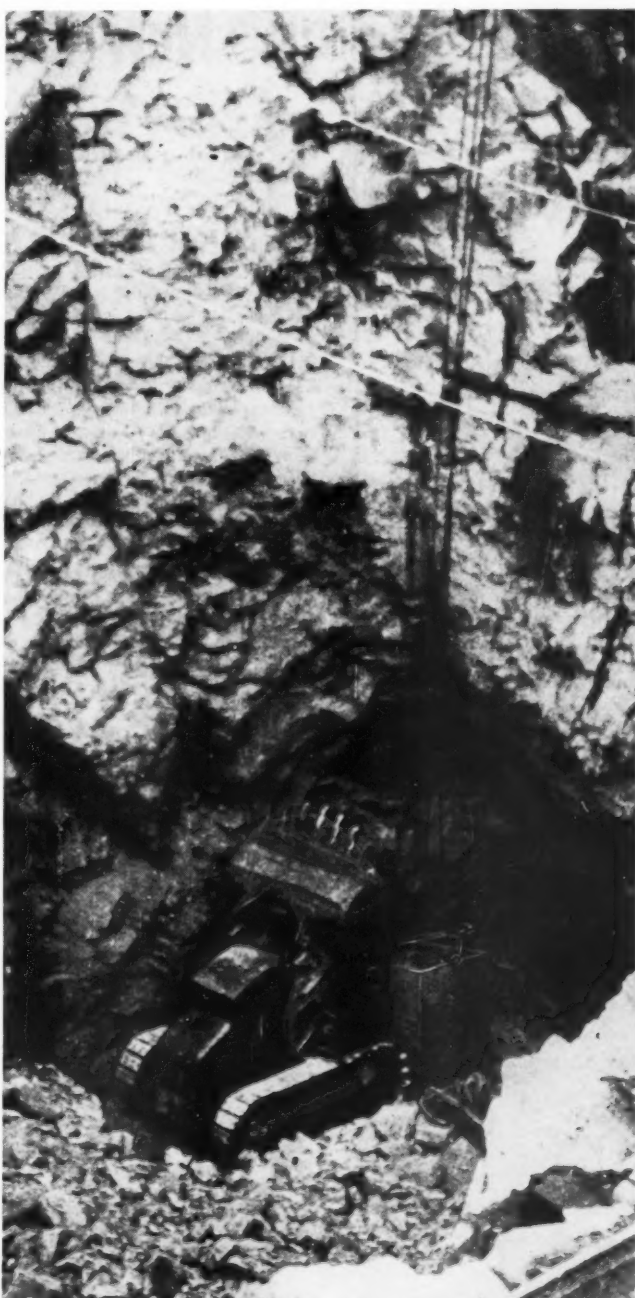
The most complete line of contractors' derricks, hoists, and winches. Write for catalog.

The Sasgen line is handled by leading equipment distributors everywhere.
SASGEN DERRICK COMPANY
3131 W. Grand Avenue, Chicago 22, Illinois

Boom only can be supplied for use with old-style Mast and bottom.

Single line cap. 300' @ 100 feet per minute

Double line cap. 600' @ 50 feet per minute



THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kollaga, Ida. London, Eng. Paris, France Milan, Italy



New Control Valve For Hydraulic Machines

■ A new four-way hydraulic control valve designed to actuate one double-acting hydraulic cylinder, or two cylinders acting as one, is announced by Groban Supply Co., 1139 S. Wabash Ave., Chicago 5, Ill. The Groban Model 126 valve is a pressure-balanced sliding-spool-type valve, suited for operating hydraulic loaders, dump trucks, and tractor attachments. The control lever may be mounted in any of four positions.

A self-centering feature permits the spring-loaded handle to return to neutral or "hold" position. In this position the hydraulic cylinder is held and the pump flow is bypassed back to the oil reservoir.

Standard pipe nipples may be



used to interconnect Groban No. 126 valves, providing bank valve features at moderate cost. Relief valves are factory set at 1,000 psi, with the pressure setting adjustable from 750 to 1,500 psi.

For further information write to the company, or use the Request Card at page 18. Circle No. 273.

SHAFT SINKING WITH EIMCO TRACTORS

Eimco 105 tractors with excavating attachment are being used for mucking hard rock shafts on the Quebec Hydro job. The 105's are lowered into the shafts and dig their way down to the bottom of the blasted rock.

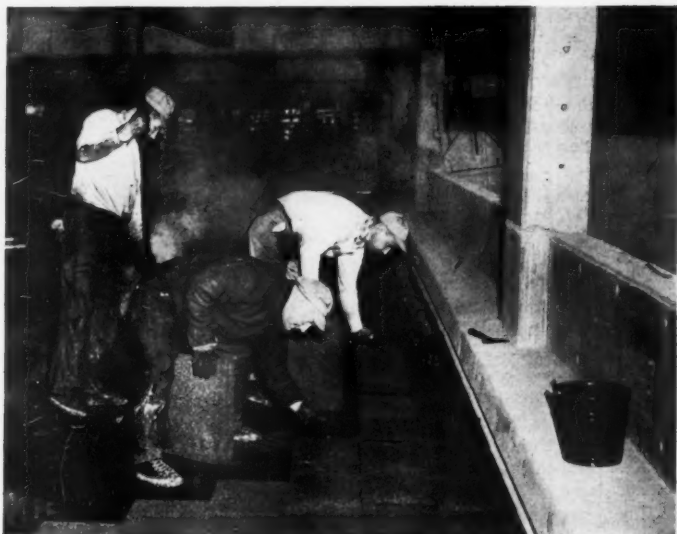
This is the toughest kind of work for any excavating equipment—only the Eimco was equal to the job. During the long winter, work continued on the job which required all types of well known heavy construction equipment of many makes and when spring came and the accounting was done, the Eimcos showed a higher percentage of availability than any similar equipment.

Eimco equipment is built for these harder than usual jobs. Heavy steel castings are used throughout on the 105. Greater maneuverability makes it usable on jobs where confined areas only are workable. Being able to dig below grade makes it practical in shaft work.

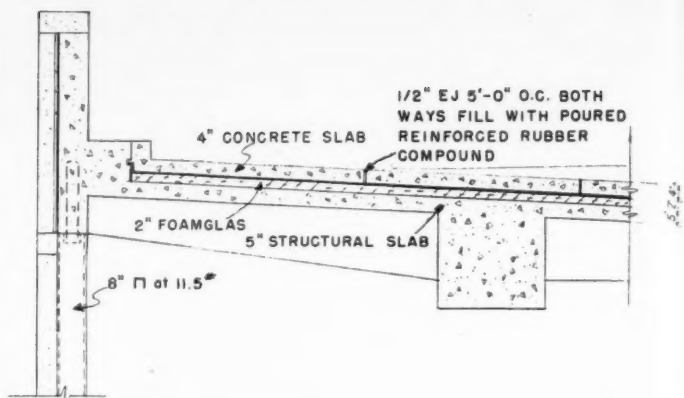
Wherever the going is tough — you'll find the best equipment for tractor, bulldozer or excavator work is the Eimco 105.

Write for more information.





Workmen place 2-inch-thick sections of Foamglas insulation after the base slab has been mopped with hot pitch. The 100-psi compressive strength of the insulation will support dead load and shock load on the deck.



New Concrete Floor Design

Surface course is poured in 5-foot-square sections over insulating blocks laid on reinforced base

A NOVEL DESIGN for a high-strength concrete wearing surface which will eliminate slab cracking has been included in the four-deck Philadelphia Parking Authority's Project B at 10th and Ludlow Streets, one of several off-street parking facilities being built in the city. The surface consists of sections 5 feet square, each separated by a 1/2-inch contraction joint. This will eliminate slab cracking which would have torn the cotton fabric and pitch membrane beneath.

Since retail-store space below the first parking deck was to be air conditioned, part of the deck—an area of 12,000 square feet—was insulated with 2 inches of Foamglas, a material having a compressive strength

of 100 psi. The design used the structural strength of the insulation to support the concentrated dead load of individual pads and the shock load of individual vehicles moving from pad to pad.

In constructing the deck, workmen first mopped the 5-inch reinforced-concrete base slab with hot pitch. On this, the Foamglas insulating blocks were laid with joints staggered. Then a two-ply cotton fabric and pitch membrane was placed over the insulation.

The 4-inch concrete wearing surface was poured in sections 5 feet square, with a 1/2-inch contraction joint between each section. While the insulation beneath the slab will strengthen the parking deck, it will

MOVE IT YOURSELF



With a Birmingham LOWBED TRAILER

Move your own equipment economically when and where you want. Standard models 10 to 60-ton capacity. Special models through 125 tons capacity. Electrically welded steel-shape frames with 2 3/4\" oak decks. Standard Forge axles, Bendix Westinghouse brakes, I.C.C. lighting. Write for details.

BIRMINGHAM MANUFACTURING COMPANY, INC.
P. O. Box 1351, Birmingham, Alabama

OVER 3 MILLION TONS OF STONE LAID
BY JERSEY SPREADERS ON
WEST VIRGINIA TURNPIKE



With all 4 primary contractors using Jersey Spreaders to lay both the rock base and fine cushion on West Virginia's new 88 mile Turnpike, as much as 22,000 tons were laid in a single day! . . . easily attached to any tractor, Jersey Spreaders have proven the fast, economical way to spread material.

Write now for complete information and illustrated literature.

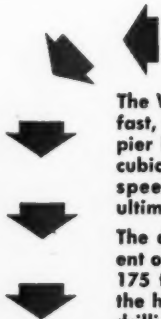


TRACTOR SPREADER COMPANY

MANUFACTURERS OF THE JERSEY SPREADER

HASBROUCK HEIGHTS, NEW JERSEY

WILLIAMS FOUNDATION TYPE HOLE DIGGERS



The Williams MDH Foundation Type Hole Digger is a big, fast, rugged machine designed specifically for foundation pier hole drilling and under-reaming. Powered by a 400 cubic inch class engine, the MDH has six forward auger speeds and two reverse. Under ideal conditions the ultimate performance range is as specified above.

The digger's kelly bar has two vertical speeds independent of the auger's rotation speed. The high speed of about 175 f.p.m. is for normal digging and lifting loads from the hole. The slow speed of about 15 f.p.m. is used when drilling hard formations.



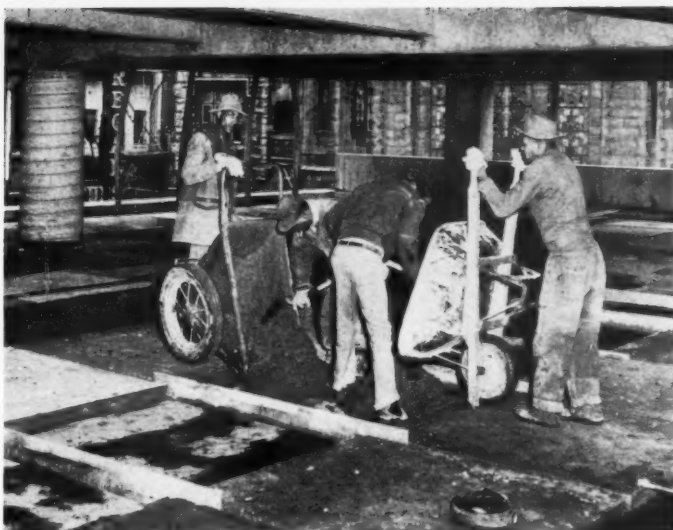
Powered by 400 cubic inch class engine for specified hole depths up to 40 feet and in diameters up to 72 inches. Phone, write or wire for information

HUGH B. WILLIAMS MFG. CO.

8330 Lovett St. • Dallas, Texas

CONTRACTORS AND ENGINEERS

The 4-inch wearing course in the Philadelphia parking garage is poured in pads 5 feet square to prevent the slab from cracking and tearing the cotton fabric and pitch membrane beneath.



Design to Eliminate Cracking

also prevent moisture from passing upward from the air conditioned space or downward as the parking deck becomes wet with rain or melting snow.

Modern Facility

The project, built to combat the parking space problem in busy Philadelphia, is the first such garage to be equipped with electro-magnetically operated controls and traffic signals. A circular scissors ramp handles the up and down traffic in separated lanes, and traffic lights regulate the flow of cars to and from each deck. The system, together with automatic ticket dispensers, was planned to do away with delays usually encountered in parking lots.

Built for the convenience of short-time parkers, the facility will allow a motorist to park or remove his car without waiting while an attendant moves several other cars which have hemmed in the vehicle. But providing a convenient parking space for shoppers is only one part of the authority's off-street parking plan. The garage will also restore property values in run-down areas in the city, and since the first floor of the structure will be given to commercial use, the rent per square foot for the building will be higher than if the entire structure had been reserved as a parking facility. Architects for Project B were Harbeson, Hough, Livingston & Larsen.

THE END

WHEN IT COMES TO SHORING— Apply This Common-Sense Arithmetic:

OLD METHOD—
3 Carpenters @ 6 min. ea. per shore =
18 minutes (or 75¢ av. labor)

ELIS METHOD—
1 Laborer @ 4 min. per shore =
4 minutes (or 10¢ av. labor)
SAVE THE DIFFERENCE!



With ELIS Products you can actually save up to 65¢ per erected shore on labor. ELIS Methods also permit you to re-use lumber many more times than is possible with the old method of measuring, cutting, splicing, blocking and wedging 4x4's . . . drastically reducing wasted materials to make additional savings. Mail this coupon or write for details.

ELIS EQUIPMENT COMPANY, Inc.

FREE TRIAL OFFER

Elis Equipment Co., Inc.
211 N.W. 4th Street Okla. City 3, Okla.
Send one Shore and Jack, freight prepaid, for Free "NO OBLIGATION" Trial. We'll return them, freight collect, within 60 days or pay \$5.00 for the Shore and \$10.00 for the Jack.

FIRM _____

ADDRESS _____

CITY _____

Scaffolding System Described in Brochure

A bulletin released by the Brainard Steel Division of Sharon Steel Corp., Griswold St., Warren, Ohio, shows the principle involved in erecting its scaffolding assembly. Slip-fit arrangements are used to eliminate nuts, bolts, pins, and tools. The booklet also illustrates various applications of the scaffolding and shows all parts of the system in scale.

Brainard scaffolding has one basic part—a tubular steel frame. By slip-fitting frames together, it is possible to erect single towers of any desired height. To provide a continuous run of scaffolding, the towers are tied together with tie-bars.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 221.

VACU-LUG

means

LOW

maintenance
cost!

TOP
QUALITY
performance!

RELUG WITH VACU-LUG!

Vacu-Lug, the miracle process for renewing traction on worn tires, cuts tire maintenance in half. Yes, you save over half the cost of new tires, regardless of size when your worn ones are relugged by the famous Vacu-Lug Process.

Here is a proven method of traction restoration—tested and approved by U. S. Agr. Dept., laboratories, contractors, and municipalities. These new lugs are applied individually from crude rubber stock and are vulcanized to the tire in a huge steam chamber. What's more important, there is a shop near you ready to give instant service—to reduce down-time to a minimum.



Write for name
of Vacu-Lug Shop
nearest you.

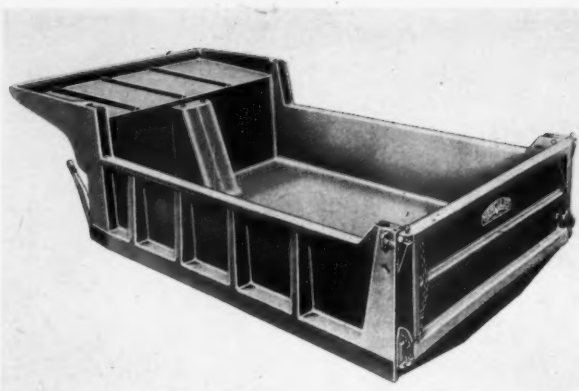
Tears and breaks in the casing can be repaired at the same time the tires are being relugged. All repair and relugging work are completely guaranteed. Renew power loss—get Vacu-Lug now!

AMERICAN TIRE MACHINERY, INC.
MUNCIE, INDIANA

Line of Dump Bodies In Variety of Models

■ A new line of contractors' dump bodies is now available from the Hercules Steel Products Corp., Galion, Ohio. The 4-series Hercules line includes the Series LD and WD rugged-duty bodies in standard lengths of 12 to 17 feet; Series CD all-purpose bodies in standard lengths of 10, 11, and 12 feet; Series D standard bodies in lengths of 8, 9, and 10 feet; and Series PL solid-steel platform bodies for trucks measuring 60, 72, 84, and 102 inches from cab to axle.

The new Hercules models are



The Model CD-20 is one of the new Hercules contractor's dump bodies recently announced.

available in each line for use with underbody and telescopic hoists. Load-carrier cab shields are available on the Series LD, WD, and CD.

For further information write to the company, or use the Request Card at page 18. Circle No. 180.

New Abraiding Tool Cleans Highway Joints

■ A heavy-duty abraiding tool used for cleaning and abraiding concrete expansion joints on highways, airfields, and pavements is made by the Asbury Corp., 717 Southeast 22nd Ave., Ft. Lauderdale, Fla. Mounted on a suitable vehicle, the tool reportedly cleans pitch-filled expansion joints at the rate of 2½ miles per hour, and rubber-asphalt or synthetic-filled expansion joints at the rate of 1½ miles per hour. The tool can be mounted on an adjustable mandrel so that it can work at any angle up to 90 degrees.

According to the manufacturer, sidewalls of the joint can be abraided to the virgin concrete with the tool without fracturing or widening the joint. The motorized unit is said to be highly maneuverable.

For further information write to the company, or use the Request Card at page 18. Circle No. 200.

Improved Striping Gun For Highway Markers

■ A new automatic striping gun for its highway-marking equipment is announced by the Kelly-Creswell Co., Xenia, Ohio.

This new gun is diaphragm-operated, which eliminates the air cylinder and upper packing gland normally found in most spray guns. According to the company, this does away with the greatest cause of air loss in automatic spray guns. As a result, the new gun reportedly requires about 25 per cent less compressed air than is normally needed.

The new gun is being installed on all Kelly-Creswell striping equipment, and is also available as a replacement part.

For further information write to the company, or use the Request Card at page 18. Circle No. 192.

Welfare Fund Booklet For Building Trades

■ A method of welfare fund accounting with the flexibility required by the seasonal nature of the construction industry is described in a booklet announced by the International Business Machines Corp., 590 Madison Ave., New York 22, N. Y. The literature includes typical procedures used for a state-wide plan operating on a weekly basis and those used on a local plan for one trade operating on a monthly basis. Both cases are handled by IBM Service Bureaus, where the necessary reports are prepared with punch cards and electronic and electric accounting machines.

To obtain "Welfare Fund Accounting for Building Trades" write to the company, or use the Request Card at page 18. Circle No. 220.



"Easier to sell service because Tournatractor does twice the work," says land-clearing contractor

Acme Paving Co., Boynton Beach, Florida, had to clear 8 acres of jungle for a motel and other business development near Boynton Beach. Difficult job conditions included:

1. tangled growth of brush, palmetto, palms and other trees so thick it was impossible to see more than a few feet into the area
2. sea-grape roots up to 25 ft. long on the beach
3. slopes up to 45% in some places
4. shifting beach-sand that provided poor footing

Into this lush jungle, Acme Paving drove their 19 mph Tournatractor. The rubber-tired, 186 hp tractor with root rake cleared ¾ acre of palmetto in 1 hour . . . stripped an acre of heavy growth in 5 hours. Correctly designed Rake sifted out sand and dirt, piled debris higher and cleaner for better burning.

"Most powerful dirtmoving machine I've ever seen," says W. W. Rhody, Acme Paving's acting sales manager.



On way to job, Tournatractor drives 15 mph through Boynton Beach traffic. "Electric controls are great," says Operator Eppinger. "I like the electric starting, too. No extra gasoline motor to fool with. No tightening of tracks all the time, either."

ager. "It's definitely easier to sell Tournatractor's services than a crawler's, because it does twice as much work as a crawler and the customer pays only \$2 or \$3 more per hour."

Tournatractor's big, low-pressure tires gave good flotation in the soft material and on steep slopes. Tires rolled over sand instead of grinding through like tracks. Working constantly in abrasive sand Tournatractor tires will last 2 or 3 years. Crawler tracks, on the other hand, must be replaced at least every 6 months, according to Mr. Rhody.

Less operating fatigue

Praise comes from Operator Jim Eppinger too. "Tournatractor is the best machine I've ever run," he says. "It's about 3 times easier to run than our old crawler. You can sit on this thing 8 hours a day and feel like going someplace at night. You sure can't do that with a crawler."

By switching to this modern tractor, you will increase your profits materially by doing more work per hour, operating with lower maintenance, and cutting job-to-job moving costs and delays. Since you stand to gain so much for the same initial cost, why not take time to investigate further?

Tournatractor—Trademark
Tournamatic—Trademark Reg. U.S. Pat. Off. T-400-B-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company





The new Bucyrus-Erie Model 15-B transit-crane.

Rubber-Tire-Mounted Excavator-Crane

A new mobile excavator-crane with a 15-ton lifting capacity is now offered by the Bucyrus-Erie Co., Box 56, South Milwaukee, Wis. The new Model 15-B transit crane is designed to handle efficiently many jobs now considered too small or restricted for profitable large-machine operation.

The wheel mounting on the unit is manufactured by White-Sterling and built especially for excavator-crane service. Power comes from a 138-hp White gasoline engine, and the machine has 10 forward speeds to a maximum of 31 mph and two reverse speeds.

The standard crane boom, 30 feet long, can be extended to 70 feet by using removable inserts. The boom suspension is of the pendant type with an 8-part operating line between the A-frame and bridle. A special 16-part suspension with pendants for booms 40 feet and longer is also available. Ten-foot jibs, which may be increased to 20 or 30 feet by adding inserts, are also offered. Booms 60 feet and longer with either 8 or 16-part suspension can be equipped with special folding equipment for job-to-job moves.

The Model 15-B transit-crane is convertible to $\frac{1}{2}$ -cubic-yard shovel, drag shovel, clamshell, and dragline front ends. The standard boom for clamshell and dragline work is 30 feet long, and it can be extended to 45 feet through the use of insert sections.

Power-controlled hoisting and lowering are done with a single hand lever and are independent of all other functions. An important safety feature is the friction swing brake that is offered in addition to the regular swing lock.

For further information write to the company, or use the Request Card at page 18. Circle No. 179.

Dewey & Almy and Grace Study Proposed Merger

A proposed merger of W. R. Grace & Co., New York, N. Y., and Dewey & Almy Chemical Co., Cambridge, Mass., manufacturer of admixtures and curing compounds for concrete, is being studied by officials of both companies. The merger, contingent on the approval of stockholders, would allow Dewey & Almy to operate as an autonomous unit and without a change in personnel or policies.

New Battery Charger For On-the-Job Use

Truck batteries can now be charged in the field with a new regulated battery charger designed primarily for trucks equipped with two-way radios and other accessories requiring a 6-volt dc power supply. The battery charger is made by D. W. Onan & Sons Inc., University Ave., S. E. Minneapolis 14, Minn.

Devised for use in the field with an Onan ac electric generating plant, this compact battery charger draws its ac input power from the auxiliary electric plant. It takes over the dc load, charges the 6-volt storage battery, and provides up to 25 amps for powering the two-way radio equipment before any demand is made on the battery.



The new Onan battery charger for field use operates with an ac generator.

The unit can also be used in buildings utilizing 110 to 125-volt 60-cycle current.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 189.

GULF PRODUCTS and FINE SERVICE

keep equipment rolling

on Pennsylvania Highway Project



Hempt Brothers, Camp Hill, Pa., are making rapid progress on the relocation of Pa. Route 126 in Fulton County. The project involves 1,250,000 cubic yards of Class 1 excavation, the construction of three large viaducts, 40,000 feet of tile underdrains, and 86,000 tons of crushed stone base. The equipment shown here is operated by M. H. Bigan Company of Windber, Pa., which has the subcontract for 550,000 cubic yards of excavation. At the left is Mr. M. H. Bigan, owner of the M. H. Bigan Company, on the right is Mr. J. S. Buchanan, Gulf Sales Engineer.

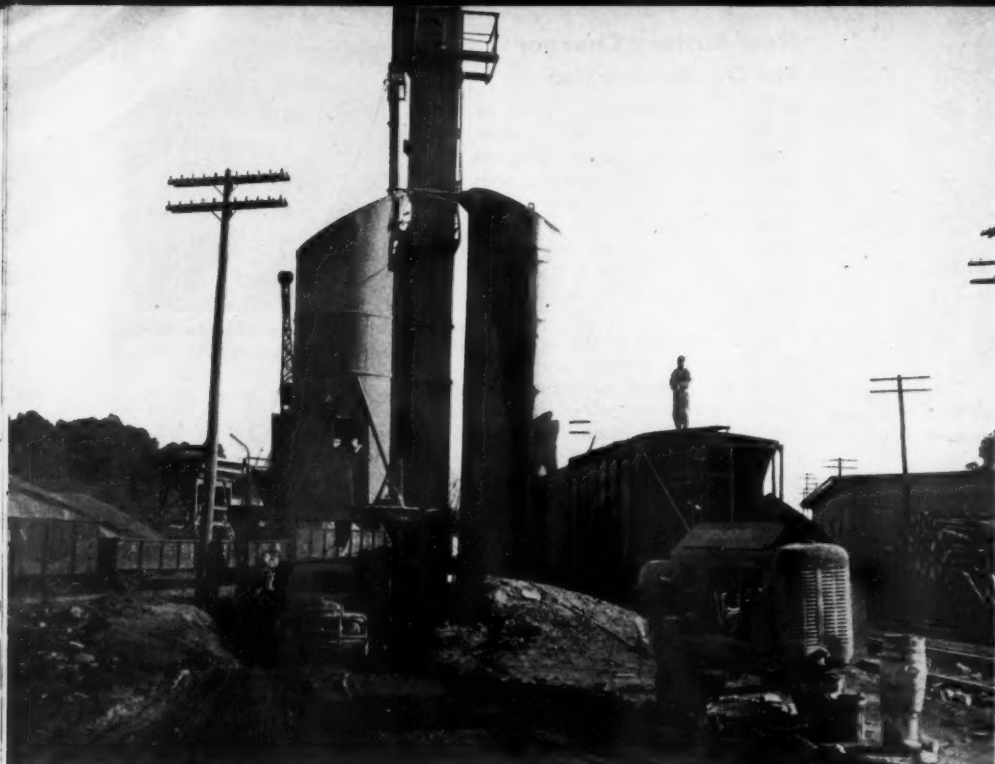
THERE are three solid reasons why it pays to specify the products identified by the familiar orange disc. One is the all-round smoother equipment performance and fewer mechanical delays that result from better lubrication with Gulf quality oils and greases.

Another is the expert engineering counsel that Gulf provides to insure the use of the most suitable lubricants and fuels for every unit of equipment and operating condition.

Third—and often mighty important—is Gulf's prompt delivery service through more than 1200 conveniently located warehouses in 30 states from Maine to New Mexico.

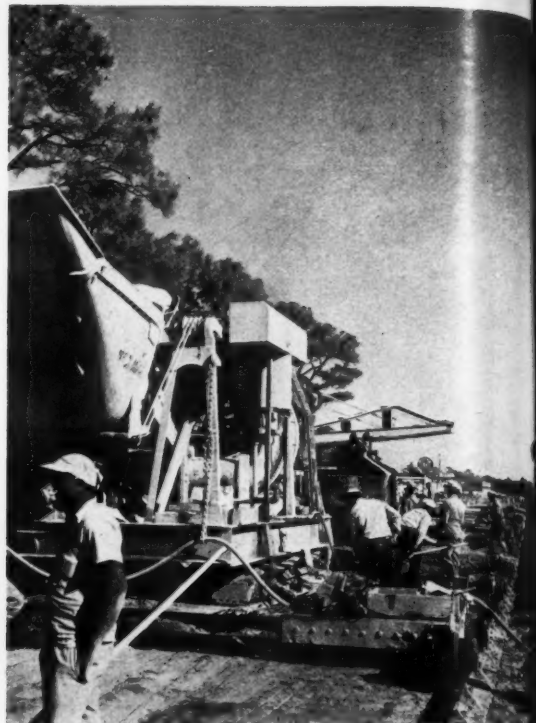
Let us discuss with you how Gulf products and services can help you on your next job. Gulf Oil Corporation • Gulf Refining Company. Gulf Building, Pittsburgh 30, Pa.



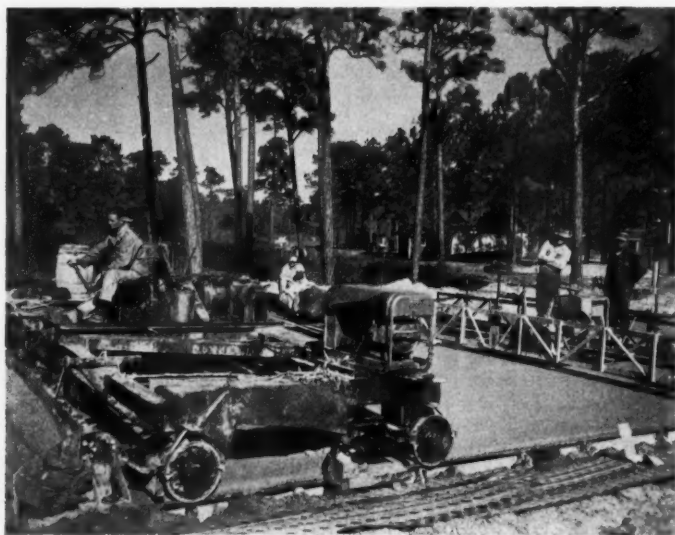


Cement, carried from railroad cars to the 100-barrel hopper over the scale by an under-track screw conveyor and elevator, is batched from this Johnson plant. Air cement agitation is supplied by a Chicago Pneumatic 105-cfm compressor.

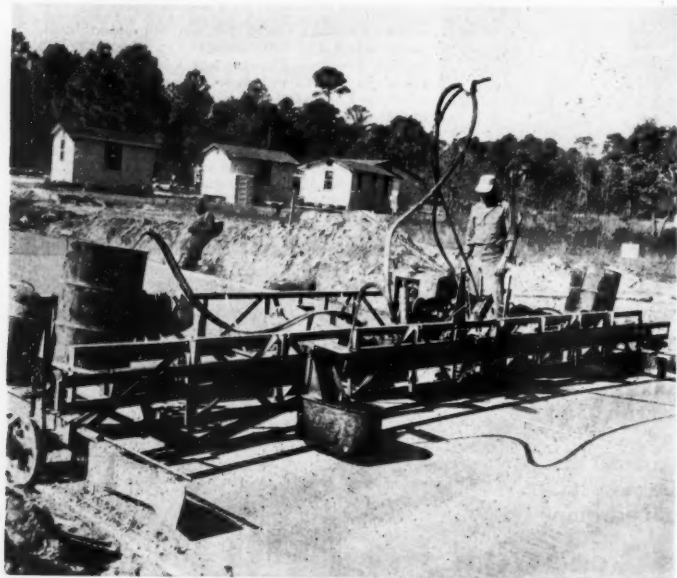
C&E Staff Photo



A Koehring Twinbatch paver pushes a Cleveland push planer as it rides the forms. As the paver moves ahead, it pulls a spreader which levels the first course.



In line behind the paver are a Heltzel finishing machine and a Flex-Plane jointing machine. The finisher mounts an Onan generator which supplies power for vibrators and for illumination during night operations.



Alpco curing compound is applied to the finished slab from a Flex-Plane rig. Guards at the edge of the machine keep the compound from touching both sides of the slab where the integral cycloid curb will be built.

Divided Highway Paved Under Heavy Traffic

Vehicles use one section of Gulf Coast Highway as concrete is laid on second two-lane section

ALTHOUGH 33 miles of beautiful sand beach make a wonderful vacation land, paving a concrete highway over the same sand is no vacation. That was the conclusion of Bowyer & Johnson Construction Co., Inc., Jackson, Tenn., as it finished the last segment of the scenic Gulf Coast Highway between Bay St. Louis and Biloxi, Miss.

Heavy through traffic on U. S. 90 and local traffic from the adjoining resort area were carried through the project at all times. During construction of the first roadway, traffic used the old road. Then two-way traffic was maintained on one new roadway while the second was constructed. Final sections of the four-lane divided highway were opened to the public this May.

The new outer or eastbound roadway is within 8 to 10 feet of the sea wall most of the way, overlooking Mississippi Sound and the chain of low sandy islands which separates the sound from the Gulf of Mexico. The roadways are divided by a median varying from three to several hundred feet in width. Each of the two roadways is 25 feet wide, 8

inches thick, and is bounded on both sides by integral cycloid curbs 6 inches high and 6 inches wide.

Beach sand which formed the base for the pavement was thoroughly wet down with water to provide some stability for equipment operation. Three Jaeger high-pressure pumps, one 6-inch and two 3-inch, pumped thousands of gallons of water from the Gulf through a system of aluminum pipe and fire hose to wet down the base. Even with this treatment, the sand would not support ordinary trucks. Track-equipped or tractor-drawn equipment and half-track trucks operated in the sand, and all other vehicles were confined to roadways. Army-surplus steel roadway mats were placed on the finished grade to support batch trucks delivering to the paver on the pavement grade.

Grading and Drainage

Included in the project was 6.33 miles of divided highway between Pass Christian and Long Beach. Although there were no deep cuts or high fills, the job included 52,000 cubic yards of excavation and 15,000

cubic yards of borrow. The two Caterpillar D8 tractors with LeTourneau scrapers which moved most of the material were able to load to capacity without the aid of a pusher. Caterpillar D4 and D6 tractors with dozers and three Caterpillar motor graders finished the grade.

Using a rake attachment, a Cat D6 rooted up 52,000 square yards of old concrete and bituminous pavement. Portions of the old pavements were left in place as local service roads. A Caterpillar D4 tractor equipped with a Traxcavator unit loaded the broken pavement into trucks, which hauled to specified points along the beach and dumped the material in piles which projected into the water in the form of jetties. These will help control erosion of the beach and provide good fishing.

Because of the almost level contour of the area and the relatively heavy rainfall, sufficient drainage facilities were especially important. This contract included the furnishing and placing of 15,000 linear feet of 12 to 30-inch pipe. Ball and spigot pipe was manufactured and delivered to the job by Faulkner Concrete Pipe Co., Inc., Gulfport, Miss. Joints were caulked with oakum and sealed with cement mortar to prevent sand from seeping into the pipes.

For the construction of 550 concrete drainage structures such as catch basins and junction boxes, the contractor used eight prefabricated steel forms which were designed to produce junction boxes about 30 inches square. The forms consisted of two-piece inner and outer sections of 1/8-inch steel plates reinforced with 1 1/2-inch angles. Pins and wedges, which were easily removed, held the forms together. The inner form, suspended by a pair of angles

from the top of the outer form, included a solid bottom. Templates for pipes of various sizes could be installed in any side of the form at desired elevation.

Some of these structures were pre-cast near the job and set in place with a crane, and others were cast in place. In either case the operation was similar. Forms were completely assembled and loaded on a trailer towed by a White army half track and equipped with a Milwaukee H2 hydraulic crane. At a location where structures were to be cast, the crane lifted the complete form from the trailer and set it in place so that it was ready for pouring.

Concrete was supplied from the same batch plant which supplied the paving, but it was mixed and delivered in two 2-yard Rex mixers and a

(Continued on next page)



Old pavement near the new Gulf Coast Highway section is broken up by a Caterpillar D6 tractor with a root rake attachment. Broken material was hauled to the Gulf, where it was dumped to form jetties.

NOW

a new low-cost
WINDROW LOADER

NOW—a new low-cost answer to windrow loading.

NOW—a Windrow Loader with a realistic capacity.
Keeps ahead of all the trucks normally available.

NOW—a Windrow Loader with fast, easy maneuverability. No need to travel to an intersection to turn around.
Turning radius: 8'-6".

NOW—a Windrow Loader for year-round use. Handles snow in addition to other windrowed material.



Tractor mounted. New claw-action feeder with automatic release. Loads earth, etc., at 4 cu. yd. per min. Snow at 7 cu. yd. per min. Ten-foot discharge height. Eight-foot boom overhang. Self propelled at 10 m.p.h.

NOW—is the time to write for full information.

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GKO Level**

The small, simple but strongly built level, specially designed for building site work.

The instrument is equipped with mirror for bubble reading, tilting screw, jointed tripod head, and both bulls eye and 40 second tubular level. Internally focusing telescope—18x magnification. All optics AR Coated.

only \$163 including fixed leg tripod

SERVICE DEPARTMENT
FACTORY TRAINED PERSONNEL





Concrete is consolidated along the edge of the form by a Mall electric vibrator powered by the Onan 23,000-watt generator on the finishing machine. The equipment was also used on concrete near all expansion joints. C & E Staff Photo

(Continued from preceding page)

3-yard Challenge truck mixer, all mounted on Ford F-7 trucks. Concrete was spouted from the mixers into the forms and thoroughly puddled by hand so that it flowed under the bottom of the inner form to make a floor for the structure. Flat concrete covers were cast in a separate form at the time basins were cast. Basins and junction boxes were placed first and pipe was laid between them.

Concrete Paving

Paving operations, started in September, 1953, followed grading and drainage work closely. The south, or eastbound, lane which parallels the sea wall was paved first.

After thoroughly wetting down the sand subgrade, the form crew set up the 8-inch Blaw-Knox steel road forms, 5,610 linear feet of which was used. The Koehring 34-E Twinbatch twin-drum paver operated within the forms and pushed a Cleveland push planer. Final fine-grading was done by a Cleveland Trailgrader pulled by the paver. A scratch template attached to the Trailgrader indicated any imperfections in the fine-grading.

After placing enough concrete for the bottom two-thirds of the slab, the paver moved ahead, pulling a spreader which leveled the first course. Mats of reinforcing steel were laid on this surface and the remainder of the concrete poured over them. The Heltzel finishing machine spread and finished the concrete. An Onan 3,000-watt generator mounted on the finishing machine provided power for a Mall electric vibrator which was used along the forms and adjacent to all expansion joints. The generator also supplied power for lights during finishing operations.

Immediately behind the finishing machine, a Flex-Plane longitudinal joint former placed 2x 3/4-inch dummy-joint plates. At 30-foot intervals, the machine placed a transverse dummy joint across the slab. Expansion joints, placed at intervals of about 200 feet, consisted of a 1 x 7-inch cypress board shaped to the 3-inch crown of the roadway. Dowels, 3/4-inch in diameter and 15 inches long, passed through holes in the board and were supported by chairs at both ends to keep them in alignment. A cap over one end of the bar provided for expansion and contraction.

Longitudinal floating was done by a Koehring unit and both transverse and longitudinal joints were finished by hand. Hand belting and a burlap drag provided the final finish. Where the integral curb was to be placed the same day, 1/4-inch dowel pins were set in the fresh concrete at 18-inch intervals. Where the curb was to be poured later, the dowels were set 9 inches apart.

Alpco concrete curing compound was applied over the surface of the slab by a Flex-Plane curing spray. Special guards set up on each edge of the machine kept the compound from covering the part of the slab on which the curb was to be built. When the curb had been placed and finished, it was hand sprayed with the same curing compound.

With 128,000 linear feet of integral cycloid curb to build, Bowyer &

Johnson worked out techniques and built equipment which enabled the curb crew to keep pace with the paving. A 6-inch steel form was first set on top of the road form after the finishing train had passed. A bridge which rode the curb form was equipped with a Beebe hand winch at each end. As concrete for the curb was placed, the bridge was rolled ahead and anchored to the form. Cable from one of the winches was then run back to a curb mule which was pulled toward the bridge by the winch to shape the curb.

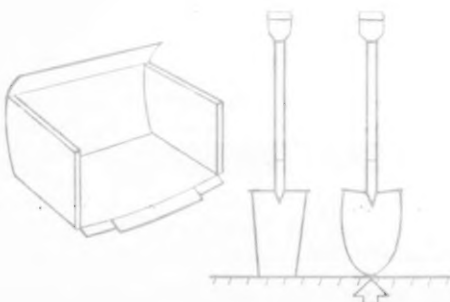
The mule consisted of a steel shoe about 6 feet long, shaped to the contour of the curb. At the top of the leading edge was a small hopper which carried a slight surplus of concrete to insure that the form was always full. A pair of hook rollers rode the back edge of the form, hold-

MR. CONTRACTOR: Compare these dirtmovers



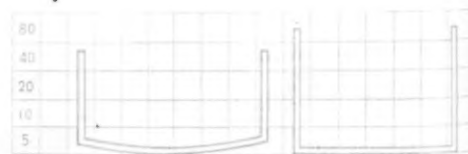
PENETRATES FASTER

Curved and offset cutting edge on Allis-Chalmers Motor Scrapers concentrates all the horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the practical soundness of this Allis-Chalmers design.



LOADS FASTER

Low, wide bowl plays an extremely important part in ease of loading. Tests have proved that loading resistance is largely determined by the height to which the load is built. New dirt entering the bowl must lift the load directly above it in order to make room for itself.



This chart shows how loading resistance continually increases as the load builds up . . . how the lower, wider bowl of an Allis-Chalmers Motor Scraper requires less time and power to get the same yardage.

PERFORMANCE MAKES DOLLARS WHEN

CONTRACTORS AND ENGINEERS

ing the mule tightly against the form. Two men rode the mule to hold it tightly against the slab. Hand finishing operations followed.

Concrete for curbs, delivered in truck mixers, was carried to the slab in two-man buckets. These special buckets were long and narrow and were equipped with a pair of carrying handles on each end. They were designed to contain the amount of concrete required for a corresponding length of curb. Thus, when they were dumped along the form, it was unnecessary to spread the concrete with shovels or to add more before shaping the curb.

Batch Plant

All concrete was produced in a plant located on a rail siding in Pass Christian about a half mile from the end of the job. The 72-ton two-

compartment Blaw-Knox aggregate bin was mounted higher than usual to permit it to discharge into truck mixers as well as batch trucks. A Koehring 401 crane with Wellman 1¼-yard bucket charged the bins while a Koehring 304 with a 1-yard Wellman clamshell bucket unloaded cars and maintained the stockpiles. Sand and gravel aggregates were received by rail from American Sand and Gravel Co., Hattiesburg, Miss.

Cement was received by rail from Ideal Cement Co., Mobile, Ala., and batched from a Johnson plant. A screw conveyor in an under-track hopper carried the cement from the cars to an elevator which lifted it to a 100-barrel hopper over the scale. Additional storage was provided by a separate 300-barrel silo. A Chicago Pneumatic 105-cfm com-

pressor supplied air for agitating the cement. Separate cement compartments in the batch trucks prevented the cement from blowing off the loads and kept it out of contact with the aggregates until both were dumped into the skip of the paver.

Water from the municipal system was delivered to the paver in a 1,000-gallon tank truck. At the paver, a 1,500-gallon tank mounted on a four-wheel trailer provided a reserve supply. A 4-inch Gorman-Rupp pump on the trailer pumped the water from the supply truck and also supplied the paver. The supply truck moved the tank trailer along as the paver moved ahead.

As many as 16 batch trucks made long hauls to the paver. With the exception of a few rented trucks, all trucks on the job were Fords. Batch trucks moved from the plant to the

job over established roads. But in order to get on the grade to the paver skip, loaded trucks hauled on army-surplus steel mats of the interlocking perforated type. These, laid in continuous rows in the wheel tracks, were picked up by a crew using a White half-track and moved ahead as the paver advanced.

A typical batch consisted of 2,800 pounds of gravel, 1,600 pounds of sand, and 752 pounds of cement. Under good conditions, the crew produced an average of one batch a minute. The 207,000 square yards of pavement was laid between September, 1953, and May, 1954. Although weather along the Gulf Coast is warm enough throughout the winter for concrete paving operations, there were many delays due to rain or other unfavorable conditions.

To complete the \$1,150,000 project, a 5-inch layer of select clay topping was spread over the entire disturbed area. Over this, 220,000 square yards was sprig-sodded with Bermuda grass sprigs which were disked into place and fertilized.

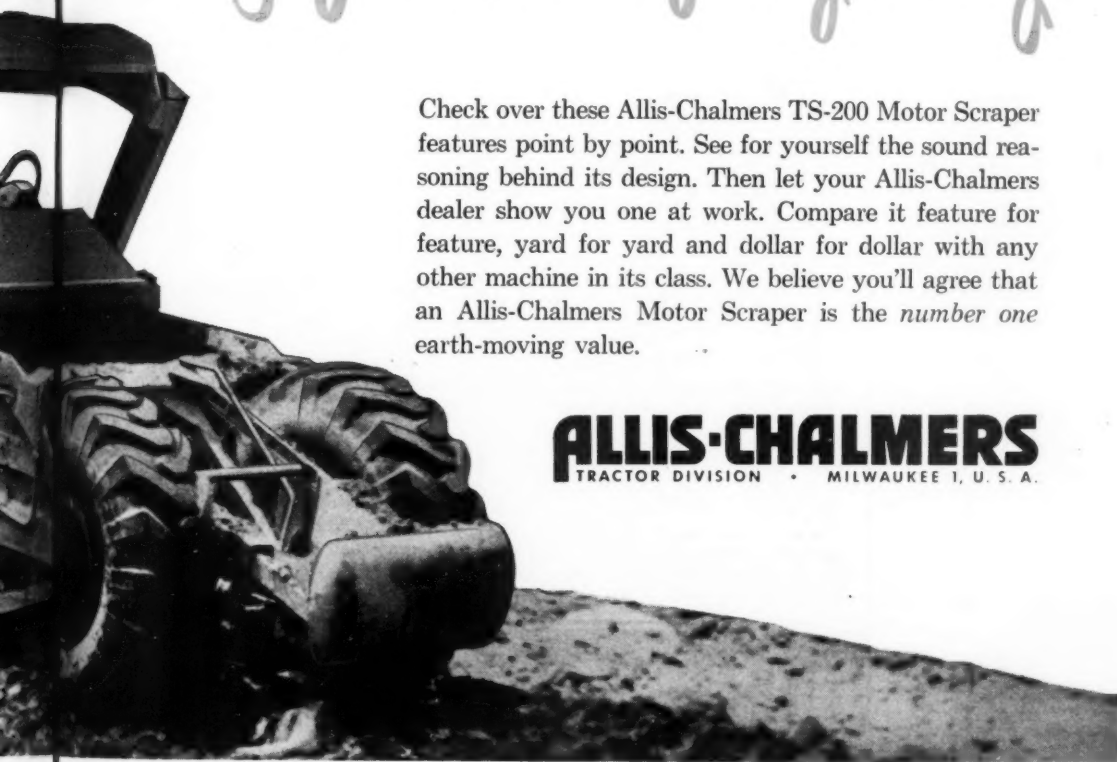
Greasing and other routine maintenance of the equipment was handled by a night crew working from a Ford truck which carried an Alemite lube system, motor oil, fuel, and an Onan ac spot welder which doubled as a power source for operating tools or providing light.

Personnel

Bowyer & Johnson Construction Co. were represented on the job by T. C. Johnson, one of the owners. A. L. Freeman was superintendent. Foremen in charge of various phases included Tony Keller, paving; Malcolm Edwards, grading and forms; J. Lindsey, curbs; Ezra Beal, concrete structures and drainage; Troy Phillips, pipelaying; and F. H. Rogers, batch plant. Project engineer for the Mississippi State Highway Department was G. W. Tullos. S. A. Tomlinson, Jr., is construction engineer, and George L. Lemon, district engineer of the department. T. C. Robbins is director of the Mississippi Highway Commission.

THE END

Introducing features before you buy

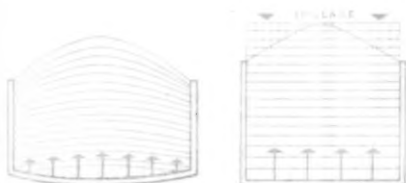


Check over these Allis-Chalmers TS-200 Motor Scraper features point by point. See for yourself the sound reasoning behind its design. Then let your Allis-Chalmers dealer show you one at work. Compare it feature for feature, yard for yard and dollar for dollar with any other machine in its class. We believe you'll agree that an Allis-Chalmers Motor Scraper is the *number one* earth-moving value.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the bowl "boils" forward, to the rear and to the sides, producing an automatically heaped load without excessive spillage.



These diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.

SPREADS EVENLY

Forward movement of ejector is timed with lifting action of apron, which provides a continuous flow of material to insure a smooth, even spread.



High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected.

Onan Names Salesman

D. W. Onan & Sons, Inc., Minneapolis, Minn., manufacturer of electric generating plants, has appointed Charles J. Helmholtz direct factory sales engineer to cover New England states. He will deal directly with Onan distributors and dealers in the area. His headquarters will be in West Medford, Mass.



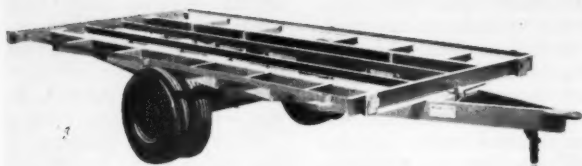
"Yes, I know you're doing your best—that's just the trouble."

WHEN DESIGN MAKES SENSE

Tilt-Top Trailer Reinforced at Edges

■ An innovation in frame design is reported to add strength at the extreme platform edges of the machinery-hauling Tilt-Top trailers made by the Miller Research Engineers, 428 S. 92nd St., Milwaukee 14, Wis. The new frame design permits the use of the full capacity of the main-frame members, even when the load is concentrated along the platform's edge rather than in the center. This is an advantage where heavy wide-tread equipment is hauled. The new taper-formed members are made from heavy-gage steel, integrally welded between the main-frame side members and out to the platform-steel side rails.

The new platform-edge support members are being used in the en-



◀ The extreme platform edges of the Miller Tilt-Top trailers have been reinforced for carrying wide-tread equipment.

tire Tilt-Top line, including the 2-ton and 3-ton Model A trailers, the 5-ton Model F unit, and the 6, 8, and 10-ton Model B trailers. On the 3-ton trailer, the heavy cross channels at both the front and the rear of the platform have been ex-

tended beyond the main side channels and out to the side rails for greater strength.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 284.

GALION

*Always gives you
most for your money*

THIS TIME IT'S TANDEM
ROLLERS WITH--

**ROLL-O-MATIC
DRIVE**



AT NO
INCREASE
IN FACTORY
LIST
PRICE

The operator moves a control lever to any desired rolling speed. This rolling speed will be closely MAINTAINED—

The Galion ROLL-O-MATIC Drive is supplied on 5-8, 8-10½, 8-12 and 10-14 ton rollers. Galion Tandems are still available with conventional gear shift, with either diesel or gasoline engine.

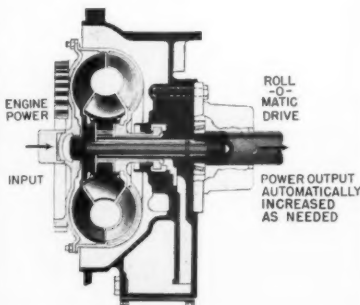


MADE BY THE WORLD'S LARGEST MANUFACTURER OF ROAD ROLLERS

THE GALION IRON WORKS & MFG. CO., General and Export Offices, Galion, Ohio, U.S.A.
Cable address: GALIONIRON, Galion, Ohio

HERE'S WHAT IT IS....

The Galion ROLL-O-MATIC Drive is more than a torque converter. It is a highly efficient combination of torque converter, fluid coupling, and automatic fluid transmission.



HERE'S WHAT IT DOES...

It automatically MULTIPLIES the engine driving force by means of oil in motion instead of by transmission gears. It automatically applies the driving force as the load demands, and automatically maintains desired roller speed regardless of grade or working conditions—

Saves up to 25% in fuel — engine life increased 35% and forward-reverse clutches 40-50% — 10% more surface rolled per day. No master clutch, no gears to shift — unequalled ease of operation — shock loads are eliminated.

**GALION
ROLL-O-MATIC
DRIVE**

sets a new
standard of
**EFFECTIVE and
ECONOMICAL
DRIVING POWER
in rollers**

* Utilizing a General Motors-Allison
Torque Converter

ESTABLISHED
GALION
1907

Rubber-Block Drive Absorbs Misalignment

■ The availability of a rubber-block drive for use on powered equipment has been announced by the Twin Disc Clutch Co., Racine, Wis. This special type of drive was developed primarily for use on Twin Disc torque converters and disconnecting fluid-power takeoffs, and is now standard on these products. Among the advantages of the rubber-block drive is absorption of both angular and parallel misalignment.

In appearance, the drive resembles one-half of a gear-tooth-type flexible coupling, except that the gear teeth are large rubber blocks molded from one of the new synthetic rubber compounds to an involute form. The mating drive ring bolts directly to the flywheel.

The special drive has been successfully installed on compressors, and the manufacturer recommends its use on pumps, independent transmissions, and generator drives. Any engine using a 14, 18, 21, or 24-inch Twin Disc friction power takeoff can be fitted with the rubber-block drive without modification of the flywheel. For installations requiring a clutch in the input drive, the special drive is also available in Twin Disc Model E and EH heavy-duty friction clutches of 14, 18, 21, and 24-inch sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 287.

Blaw-Knox Division Names Sales Manager

John Pendergast has been named domestic sales manager of the Foote Construction Equipment Division of Blaw-Knox Co., manufacturer of road paving machinery. For years a sales promotion manager of the Heil Co., Milwaukee, Wis., Mr. Pendergast was associated with Contractors Machinery Co., Batavia, N. Y., before joining Blaw-Knox.

Check your Tackle Blocks for best service. Worn sheave grooves, bearings and pins are expensive.

**LOWER
HANDLING
COSTS**

• Blocks correctly designed and engineered for your specific operation save money.

Our engineering services are available for your specialized needs.

Over a quarter century of service.

Send for our complete catalog today.

MADESCO TACKLE BLOCK CO.
EASTON, PA.

**MADESCO
BLOCKS**

HAE-M592-2-54

CONTRACTORS AND ENGINEERS



Portable Electric Pot For Melting Asphalt

■ A new portable electric melting pot for melting asphalts, tars, pitches, resins, mastics, and other viscous materials has been introduced by Glas-Col Apparatus Co., Inc., 711 Hulman St., Terre Haute, Ind. Weighing 15 pounds, the melting pot is especially suitable for repair jobs where only small amounts of material are needed. The working capacity is 3½ gallons.

The melter operates from any 115-volt 60-cycle outlet at 1,250 watts. The heating chamber insulation is of 1¼-inch-thick Fiberglas, and the heating elements are of Nichrome wire. The unit's housing is of 20-gage aluminum.

For further information write to the company, or use the Request Card at page 18. Circle No. 299.

New Lima District Manager

Serving as a district manager for Baldwin-Lima-Hamilton Corp., construction equipment division, Lima, Ohio, is John G. Watson. His territory includes the Calumet district in Indiana, Illinois, Missouri, Kansas, and lower Michigan.

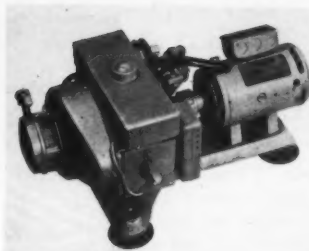
A sales engineer for the construction-equipment company since 1953, Mr. Watson began working for the organization in 1942.

Small Electric Plant And Pump Combination

■ A portable combination electric power plant and water pump has been announced by the Trailite Corp., Three Lakes, Wis. Weighing only 50 pounds, this compact unit supplies 700 to 1,000 watts of 110-volt 60-cycle ac electricity. In addition, it performs a number of pumping jobs and will charge 6 or 12-volt batteries.

The generator is internally self-regulated to maintain voltage within commercially acceptable limits. This, along with standard plug-in receptacles, automatic rewind starter, and 2-hp engine with steel connecting rod and antifriction bearings, reportedly provides ease of starting and dependable operation.

For further information write to



The Trailite electric plant and pump.

the company, or use the Request Card at page 18. Circle No. 199.

Improved Starting For Diesel Tractor

■ All-weather direct electric starting with newly developed glow plugs is now incorporated into the 24-volt

push-button electric starting system of the Caterpillar D4 track-type tractor. The glow plug is a heating element, part of which extends into the precombustion chamber of the diesel engine.

A fine resistance wire fits inside a tube or sheath, and the entire cavity is filled with magnesium oxide, which acts as a support and as an electrical insulator between the wire and the sheath. When electric current is applied to the wire, the sheath attains a temperature of 1,800 degrees within 30 seconds to heat the air in the precombustion chamber. In tests, preheat time has varied from zero to 4 minutes.

For further information write to the Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card that is bound in at page 18. Circle No. 281.



Why the big operators are buying the UNIVERSAL 880 Senior "R"

No other gravel crushing plant in its weight class can challenge the Senior "R"'s output.

- 1 **More Tonnage From Screen** — 4' x 12' screen with full 48 square feet of screening area plus inclined mounting gives 25% or more output.
- 2 **Top Primary Output** — Universal 1036 overhead eccentric force feed jaw crusher. The top producing jaw on the market.
- 3 **Maximum Secondary Production** — 30" x 24" roll crusher. The largest offered in a plant of this weight. Feed design uses the full 24" width of the roll shells.
- 4 **Big 30" Conveyors** — You need extra wide conveyors to handle the Senior "R"'s high output . . . and you get them! Channel frame design for ruggedness — not formed frames.
- 5 **All This In A Portable Plant** — designed to meet state highway weight restrictions.
- 6 **Low Initial Cost** — Low maintenance.

NO OTHER PLANT HAS ALL THESE FEATURES

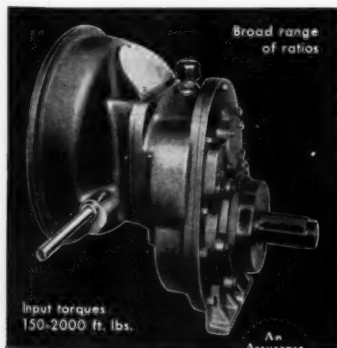
These are but a few of the reasons why the big operators, who keep a careful check on operating costs and production records, buy the Senior "R". Compare it feature for feature with other plants and prove this to yourself . . . UNIVERSAL'S THE BUY! For complete information see your nearest Universal distributor, or write to Universal Engineering Corporation, 327 8th Street N.W., Cedar Rapids, Iowa.



UNIVERSAL ENGINEERING CORPORATION

620 C AVE., N.W., CEDAR RAPIDS, IOWA

A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St. Chicago 51, Illinois



Special heavy-duty

- Transmissions
- Reduction Units
- Mechanical Drives for Torque Converters

Cotta Transmission Co., Rockford, Illinois

COTTA
HEAVY-DUTY
TRANSMISSIONS

"Engineered-to-order"

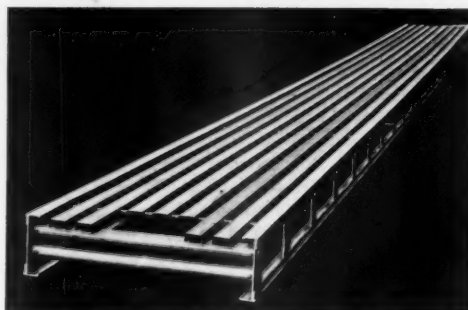
Swing Stages Improved

■ Design improvements in its line of swing stages are announced by Louisville Ladder Co., 1101 W. Oak St., Louisville 10, Ky. The Louisville stages are now made with double rung assemblies at each end and at two intermediate points down the length of the longest stages. At the same time, the siderail depth has been increased from 4 to 5 inches.

Both changes contribute to a greater rigidity and strength and will be found on equipment 20 through 28 feet long. Shorter units will have single rung assemblies and 4-inch siderails.

All Louisville stages will continue to be made with the company's pat-

One of the swing stages made by the Louisville Ladder Co., Louisville, Ky.



ented rung assembly and the characteristic formed-aluminum-channel decking. Standard width is 20 inches with extra-wide units available up to 30 inches in width.

For further information write to

the company, or use the Request Card that is bound in at page 18. Circle No. 316.

Observe the rules for safety. The life you save may be your own!

Special Lubricants for Construction Equipment

■ A line of lubricants for heavy equipment is offered by the Keystone Lubricating Co., 21st and Lippincott Sts., Philadelphia 32, Pa. According to the manufacturer, these lubricants have the ability to lubricate efficiently under the most severe operating and weather conditions. The line includes wire-cable grease, No. 30 B grease, No. 29 cartridge open-gear grease, and CP grease.

The wire-cable grease is reported to penetrate throughout a cable, and it does not dry out to deposit a hard-glazed coating on the cable surface. The No. 30 B heavy grease provides effective protection for cams of walking draglines because it is not squeezed or pushed off under the pressure exerted when draglines are walked. The No. 29 cartridge grease offers contractors a versatile lubricant for all open gears and dipper sticks. Keystone CP grease is for general use on chassis parts of trucks, tractors, and road machinery.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 272.

Reports on Drag Scrapers For Tractors and Cranes

■ A new booklet tells how to clean under bridges and culverts using Crescent drag scrapers with tractors—equipment which can work in places with low head room. This job report contains pictures showing various jobs, describes methods of operation, and gives representative cost figures.

A second bulletin explains how to make a boom machine reach further and dig more, and tells how a Sauerman Crescent scraper can increase the capacity of a crane. When the crane is equipped with a track cable, Crescent bucket and carrier, the length of span is limited only by the spooling capacity of the hoist drums.

To obtain this literature write to Sauerman Bros., Inc., Dept. C-34, 522 Clinton St., Chicago 7, Ill., or use the Request Card at page 18. Circle No. 296.

Line of Low-Bed Trailers

■ A line of low-bed heavy-duty trailers is described in literature from the Foster Trailer Co., 500 N. Hollywood, Memphis, Tenn. The Foster Model CPT units are available in 15 to 35-ton capacities in tandem, semitrailers, and full trailers. They are suitable for hauling all types of equipment up to 35 tons in weight.

The company also offers 16-wheel trailers in 40, 50, and 60-ton-capacity models.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 218.

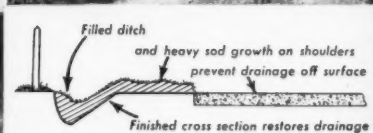
Fennel Instrument Moves

Fennel Instrument Corp. of America has moved its sales offices and warehouse to larger headquarters at 11-27 44th Road, Long Island City, N. Y. The firm offers a complete line of levels, transits, and theodolites for the construction industry.

CONTRACTORS AND ENGINEERS

Let These ADAMS Machines

RENEW YOUR ROADS THIS LOW-COST WAY



Do you have surfaced roads which have lost their drainage—ditches need cleaning—sod has built up on shoulders so that water can't drain off the road surface? Such roads become soggy—require excessive maintenance.

A motor grader, an Adams TraveLoader and a few trucks can rebuild those grades good as new at the rate of about a mile a day at low cost. Such a reclamation job on a gravel road is pictured here. The motor grader cleans ditches and cuts down shoulders and the TraveLoader quickly loads surplus material to be hauled away. Many counties sell the material to nearby farmers for \$1 a load, thereby cutting costs.

Money spent in this way not only salvages the road grades and vastly reduces maintenance costs, but makes a good showing for the taxpayer's money.

Talk to your Adams dealer now about an Adams TraveLoader and a restoration program on your roads.

J. D. ADAMS MANUFACTURING • INDIANAPOLIS, INDIANA



The TraveLoader is also great for loading all kinds of loose material out of stockpiles



Motor Graders



TraveLoaders



Pull-Type Graders



The Model 200 concrete cutter made by the Felker Mfg. Co., Torrance, Calif.

New Concrete Cutter Has Maneuverability

■ A new concrete cutter offered by the Felker Mfg. Co., 1128 Border Ave., Torrance, Calif., is balanced so that it can be tilted back on the rear wheels or lifted on the front wheels for easy maneuvering in tight quarters. The machine, powered by a 13.5-hp Wisconsin engine, has been designed to use 10 and 12-inch Felker Di-Met diamond blades, but is sufficiently powered to accommodate larger wheels with special guards. Cutting depth is $2\frac{3}{4}$ or $3\frac{3}{4}$ -inches. Weight of the Model 200 basic unit is 482 pounds.

Suspension is on four wheels with the rear wheels attached to the frame. The front wheels raise or lower the frame, controlling the depth of cut through a foot-operated hydraulic jack. A release valve permits a slow hydraulically-controlled down-feed which gradually eases the diamond blade into the work.

For further information write to the company, or use the Request Card at page 18. Circle No. 257.

Fast Reverse Rotation For Power Takeoffs

■ A two-speed bearing hanger designed to increase the versatility of power takeoffs for truck-mounted equipment has been announced by Gar Wood Industries, Wayne, Mich. The new bearing hanger adds high-speed reverse rotation to regular power takeoff drives. It is especially recommended for winch operation, since long lengths of cable can be payed out fast at higher speed than is possible with the reverse speed of regular power takeoffs.

A power takeoff with one speed forward plus the bearing hanger provides two-speed reversed-drive rotation, while a takeoff with two speeds forward with the bearing hanger provides four-speed reversed-drive rotation.

For further information write to the company, or use the Request Card at page 18. Circle No. 243.

I-H Department Manager

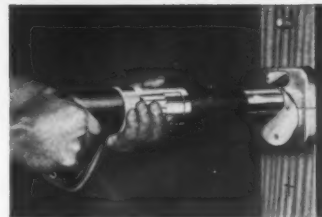
International Harvester Co., Chicago, Ill., has appointed Otto A. Krueger manager of the industrial engineering and construction department to succeed J. R. Allan, who has retired. Assistant manager of the department for a number of years, Mr. Krueger joined I-H in 1916. The new assistant manager of the department is Harold W. Parthemer, formerly a construction engineering consultant.

SEPTEMBER, 1954

Cartridge-Type Tool Sets Pins in Concrete

■ A new fastening tool that sets 5 to 8 hardened steel pins per minute in steel or concrete is announced by the Powder Power Tool Corp., 7526 S. W. Macadam Ave., Portland 1, Oreg. The Drive-It 410 is powered by a single-load .38 blank cartridge.

To operate the tool, the breech is snapped open, the pin and load is inserted, and the tool is pressed against the work surface. A right turn of the tool fires the stud. The device is used for such work as forming a permanent fastening for sleepers and insulation, attaching angle irons to con-



The Drive-It fastening tool.

crete forms, and fastening switch boxes and metal window frames.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 250.



AIR CONTROLS *mean you'll* Move More with a **MICHIGAN**

Get right into the cab of a MICHIGAN* excavator-crane, stand behind the operator—and get an eye-full of the *right way to get more yardage*.

Notice how easy it is to operate these air control levers! Notice the sure, light touch, and the instant response of clutch rams—the swift thrust of massive power—the fast, smooth swing—the perfect “feel” of the load throughout the full operating cycle. They add up—to bigger yardage!

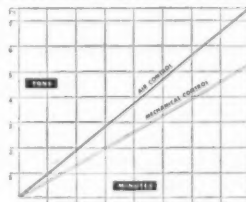
By saving seconds on every operating cycle, your air-controlled MICHIGAN can add as much as a full working hour or more to a day—and adds substantially to the amount of profit-making work done. Equally important, Air Controls are easy on the operator—don't tire him, keep his efficiency high all day.

By all means, get and read “More Yardage Through Air Power”—an attractive illustrated book that tells the full story of MICHIGAN Air Controls. A copy of it is included in the MICHIGAN “24” Fact Folio—with specifications and action photos. The coupon brings your copy—promptly.

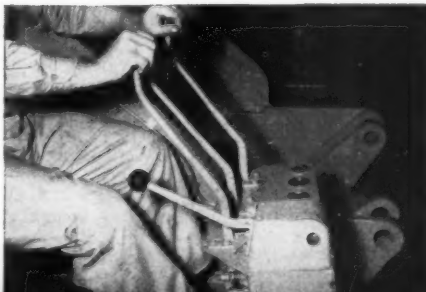
COMPETITIVE TEST PROVES AIR CONTROLS FASTER

“Recently another company rented our MICHIGAN—and ran a test against their own mechanically operated crane. The machines were of equal capacity—the operators judged equal in skill.”

“In 8 minutes the MICHIGAN loaded $7\frac{1}{2}$ tons, against $5\frac{1}{4}$ tons by the other machine—a 43% victory for Air Controls.”
Suisman & Blumenthal, Hartford, Conn.



*A Trademark of Clark Equipment Company



**CLARK
EQUIPMENT**

Construction Machinery Division
CLARK EQUIPMENT COMPANY
284 Second Street, Benton Harbor, M

Please send the MICHIGAN “24” Fact F

Name _____ Title _____

Firm _____

Address _____

City _____ County _____ State _____

*Eliminate the cause of mishaps by making use
of past experiences and by continual observation*

Preventing Accidents Is Only Half the Job

By JOHN C. TURNER, JR., Engineer, Hartford Accident & Indemnity Co.

THERE IS A PREVALENT—and erroneous—idea that insurance companies worry most about accidents because they have to pay the doctor bills, that contractors worry because insurance companies may complain about injuries, and that the only one who seems not to worry is the injured employee, who gets a good rest in the hospital at no expense to himself.

Just the reverse is true. The primary interest of the insurance company in preventing accidents is to keep the contractor's insurance rates at a reasonable level. If this is done, the contractor's operating costs will remain lower, enabling him to continue making competitive bids. And if the contractor remains competitive and growing, he is a bigger account for his insurer.

In the long run, the contractor pays all doctor bills and direct accident expenses through his insurance premium. Few accidents and low bills mean a low premium; a number of accidents involving sizable bills necessitates a steeper premium. Moreover, any accident means he loses the production of his injured employee and the time and money spent to train the man to do a job.

The biggest losers are the employee and his family. Aside from the injury to himself, the employee faces the loss of income for the time he is hospitalized.

Accident prevention, then, is not or should not be, the sole concern of the insurance company. Contractors and their employees have an equal stake in making sure that accidents do not happen.

Conditions on the Job

Actually, neither the contractor nor his employees can prevent accidents. But they can eliminate the conditions which cause accidents. By analyzing past mistakes and experiences and applying that knowledge to the present job, both contractor and employees can change conditions as they exist on the job to conditions as they should exist while work is in progress.

If a contractor or a supervisor comes onto a job and finds forms which have been stripped and allowed to lie around, past experience should warn him that trouble, if not inevitable, is at least a possibility. Nails are sticking out of the forms. Men are battling their way over and around the stripped lumber. A truck or grader is bearing down on the forms. Whether a man gets a nail in his foot or whether the lumber or the machine is damaged, the accident that is on its way means a loss in time, money, and material that will be felt by the employee and right on up the line.

By changing conditions immediately, contractors and crews can both prevent accidents and remove their causes. This, in essence, is what the National Safety Council calls the Safety Observation Plan.

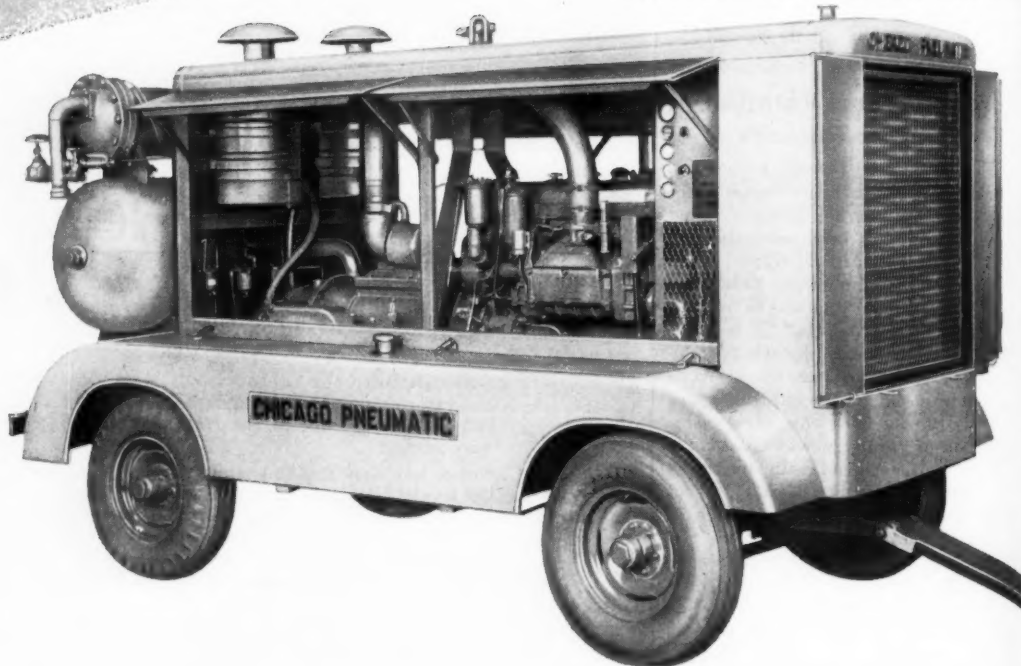
It is as simple as making an adjustment to a TV set. If everything does not look just right, a change can be made. Anyone can do it.

A workman grabs a hammer and chisel and starts up a ladder. Look-

ing at the top of the ladder, he sees that it is not tied off. There is the possibility of an accident to himself or others. So he makes an adjustment; he ties off the ladder. Then he continues with his job.

WEIGH LESS

Capacities: 125, 210, 365, 600 cfm.



... CP ROTARY COMPRESSORS

After 18 months of proving themselves on the job, CP Power Vane Rotary Compressors are now available in sizes of 125, 210, 365, and 600 cfm. Having no pistons, connecting rods, valves or other reciprocating parts to maintain, they afford thousands of hours of trouble-free service. Their oil injection system provides copious lubrication, cools the air during compression and assures long rotor blade life . . . yet oil consumption is remarkably

low and air is delivered practically oil-free.

Smooth running CP Rotary Compressors also have a variable speed capacity regulator which prolongs life and reduces wear and tear . . . increases over-all economy. CP Rotaries are available with Hercules gasoline and General Motors diesel engines. For more information, write for Bulletin SP-3084-2. Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.

CONTRACTORS AND ENGINEERS

A check is made on some wire rope being used in a building project. Constant observation of materials, equipment, and men—the three factors causing accidents—will eliminate those accidents which never should have happened.



Such observation and corrective measures should cover the entire job. There should be a check on all things which cause accidents. Grouped under three headings, these potential causes may be classified as

equipment, materials, and people.

Causes of Accidents

Influencing the possibility of accidents on the job are a number of factors concerning the contractor's

equipment. If the equipment is suitable for the job and easy to use, the possibility of accident is minimized to a great degree. Contractors can also consider whether additional equipment will add to the safety of

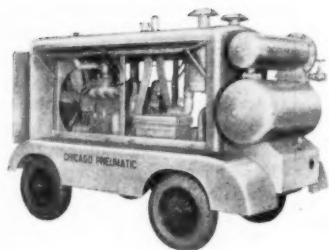
both machines and men. If the work area is crowded, the arrangement of equipment can be changed to simplify the work. Maintenance, of course, is an item which needs constant checking.

Using satisfactory materials—materials which can be handled easily and which are easily accessible—also reduces accident hazards. In this area, the contractor, supervisor, or employee can also check to see whether handling details can be improved and whether the method of using the materials is satisfactory. Keeping work areas clear is an obvious safety guard.

Aside from instilling safety-mindedness in the men on the job, the contractor and supervisors can aim toward a better safety record by considering several points regarding the employees. Making sure each workman is fitted for his job, understands his work, and can do the job he is assigned will enhance the prospects of having a safe project. Men, like equipment and materials, can be involved in accidents. Unlike equipment and materials, men can look ahead, see cause and effect, and help prevent the causes of accidents. The contractor and his employees who use this simple observation plan will find it benefits everyone, costs nothing, and is easy to apply.

THE END

THAN PISTON TYPES OF HALF THE CAPACITY...



IDEAL WHERE PORTABILITY AND RELIABILITY COUNT!

Three ways better...

- 1 **Tapered roller main bearings** afford positive positioning of rotor between compressor cylinder end plates.
- 2 **Safety friction drive** between engine and compressor limits transmitted torque—provides added protection for engine and compressor against shock.
- 3 **Perfect alignment of all parts** is afforded by metal-to-metal joining of housings and fitted-step construction of mating surfaces and shaft-mounted parts.

- CP Portable Power Vane Rotary Compressors occupy 30% less space than equivalent piston type machines.
- Compressor weighs less, is more compact than piston type machines of half the capacity.
- Due to oil injection, discharge air is 100° lower than in equivalent piston type compressors.
- Spring suspension, automotive steering on four wheel models, tilt operation, compactness and light weight make CP Rotary Compressors ideal for towing and maneuvering anywhere.
- Rotary shaft seal at drive end excludes dirt from shaft bearings.
- Automatic safety controls stop engine in case of excessive water temperature or oil failure.



Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Magnesium Form Fillers

■ A new all-magnesium filler in 4, 6, and 8-inch sizes for use in concrete forming is announced by the Symons Clamp & Mfg. Co., 4249 Diversey Ave., Chicago 39, Ill. The fillers are extruded pieces that have been slotted and punched to match both standard Symons magnesium and steel-frame forms. The slots, spaced every 6 inches, permit use of the fillers on step footings on a 6-inch module.

For further information write to the company, or use the Request Card at page 18. Circle No. 256.

Booklet on Trencher

■ A new catalog describing dozens of applications for the improved Parsons 88 Trenchmobile has been released by the Parsons Co., Newton, Iowa. The Model 88 will dig up to 5 feet deep in widths of 8, 12, or 16 inches. Maximum rate of advance is 14½ fpm. The trencher will travel on roads, under its own power, at speeds up to 12.6 mph.

The new catalog is illustrated with photos showing the Trenchmobile, its operating parts, and its performance on the job.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 286.



Motor Grader Gets Added Horsepower

■ The Galion Model 118 motor grader is now being supplied with a 125-hp General Motors or 115-hp International Harvester diesel en-

gine. In addition to increased horsepower, the Model 118 also has been given a heavier drawbar. The total weight of the unit without scarifier

ranges from 24,050 pounds up, depending on the extra equipment.

Features include four-wheel all-gear drive, constant-mesh transmission, combination manual and hydraulic booster steering, and large front and rear tires. The grader is available with the Barnard & Leas elevating grader attachment.

For further information write to the Galion Iron Works & Mfg. Co., Galion, Ohio, or use the Request Card at page 18. Circle No. 317.

Changes at Chain Belt

William H. Brandt, assistant secretary of Chain Belt Co., Milwaukee, Wis., has retired after more than 44 years of service with the company. He will be succeeded by W. E. Schauer, former administrative assistant of the financial department.



The new Century Posi-Feed spreader.

Tailgate-Type Spreader Features Positive Feed

■ A new hydraulically controlled sand, cinder, and crushed-rock spreader features an auger and agitator operating inside the truck body to provide positive feed, prevent channeling, and break up lumps of coagulated material to spreading size.

With this mechanism, the Posi-Feed spreader does not depend upon gravity flow from the truck to the spinner. The unit, made by the Century Engineering Co., 465 W. Main St., Waukesha, Wis., simply drops in the truck body and is designed so that it is held securely by the chained tailgate, and requires no bolting.

The one-man-operated spreader is adjustable to any height and the spinner is always level with the roadway regardless of truck-body angle. It will cover any width in any direction, from a few feet to a four-lane highway. With the spinner removed and a channeled tray attached below the trough, the spreader converts to a seal-coat unit which will spread any material up to a 10-foot width.

For further information write to the company, or use the Request Card at page 18. Circle No. 229.

Form Ties Simplify Placing Furring Strips On Concrete Walls

■ Special ties which protrude from interior concrete walls and are left in place after the form has been stripped have eyelet holes which make it easy to attach furring strips or 2 x 4's. The Irvington Form & Tank Corp., 20 Vesey St., New York, N. Y., supplies the special ties to builders who wish to use this technique. With the special ties, the furring or studs go right up against the wall, and are bolted to the tie.

For further information write to the company, or use the Request Card at page 18. Circle No. 171.

Announcing!

The New LITTLEFORD CLARKMOORE ROAD HEATER-PLANER

Littleford-Clarkmoore Heater-Planer is designed to economically smooth out corrugated, rutted and irregular bituminous surfaces on roads, streets, airport runways and highways in one continuous operation.

This versatile unit will plane off high crowns built up by numerous resurfacing applications; eliminate corrugations on hills, at stop signs, in gutters; gets rid of troughs and ruts developed by heavy traffic; will plane top surfaces to prepare for seal coating or resurfacing with plant-mix; removes fatty sections or slippery places; roughs bad hills to avoid skidding and will provide a level course where settlement of surface makes it necessary to build up.

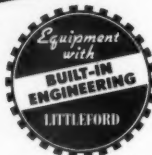
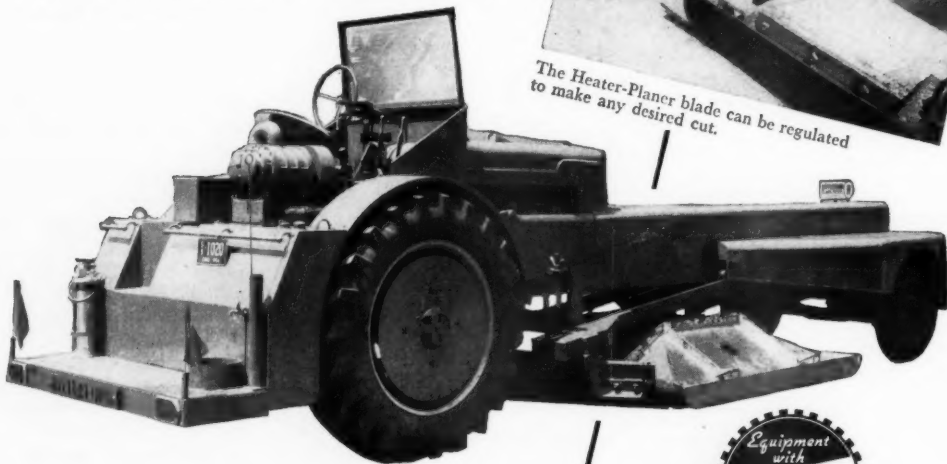
The operation of the Heater-Planer is made simple and easy by the hydraulically operated and controlled blade and surface heater hood. The Heater-Planer is equipped with low pressure fuel oil burner that heats fast and efficient to keep continuous operation.

This Littleford-Clarkmoore Heater-Planer is the modern maintenance unit for quick, low-cost table-smooth riding surfaces. Contact your nearest Littleford dealer or write for further details.

FOR HEATING
AND PLANING BITUMINOUS
ROADS AND STREETS



The Heater-Planer blade can be regulated to make any desired cut.



Littleford-Clarkmoore Heater-Planer planes off and windrows the material so that it can be easily shoveled into a truck. The crew works behind the Heater-Planer, not out in traffic.



LITTLEFORD

LITTLEFORD BROS., INC.
453 E. Pearl Street, Cincinnati 2, Ohio



**ACCURATE
MEASURE
FASTER**

with the new
distometer

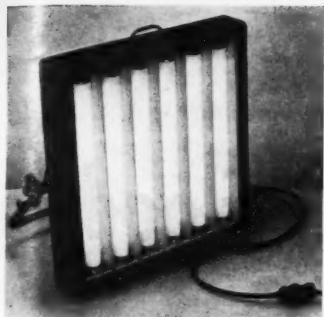
PRECISION CALIBRATED
measuring wheels

Model 200 for repeat cycles of 100 ft.	27.50
Model 400 for distances up to 19 miles	54.50
Model 600 for rough terrain up to 19 miles	64.50

10 Day Free Trial on request on company letterhead—write

ROLATAPE, INC.
1741 14TH ST. P.O. BOX 1190
SANTA MONICA, CALIFORNIA

CONTRACTORS AND ENGINEERS



Fluorescent Floodlight For Outdoor Use

■ A portable fluorescent floodlight that is weatherproofed for outdoor as well as indoor use is offered by the Electric Cord Co., 195 William St., New York 38, N. Y. The floodlight uses six standard 15-watt fluorescent tubes, and is made for 110-volt ac service. It weighs 33 pounds and comes in a steel case 21x21 inches in size that has a carrying handle. A separate switch for zero-weather starting and a 12-foot waterproof cord are standard equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 202.

Hydraulic Research Book

"Hydraulic Research in the United States 1954," contains information from reports by hydraulic and hydrologic laboratories in this country and Canada. Projects are reported by title and include such information as the sponsor, project correspondent, the nature and description of the project, and its present status. A number of the projects are covered for the first time.

Private, university, and government-supported research are covered. Edited by Helen K. Middleton, this National Bureau of Standards publication can be obtained for \$1.25 from the Government Printing Office, Washington 25, D. C.

Masonry Water-Repellent

■ Literature on a silicone-type compound for damp-proofing above-grade masonry is available from the Silicone Waterproofing Corp., 700 Dryades St., New Orleans 12, La. Glass Seal 35 is a colorless water-cleaner liquid, which penetrates into the masonry to form a water-repellent form. It is reported to be resistant to heat, light, cold, and a variety of chemicals.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 203.

MESSANGER CONCRETE VIBRATORS and GRINDERS

A few exclusive dealer territories are available. FRANK D. MESSINGER
Messenger Vibrators
P.O. Box 124
FAIR HAVEN, MICH.

How Tractor-Shovels Work In Pits and Quarries

■ How various sizes and types of Payloader tractor-shovels are used most advantageously in the pit and quarry and around the plant to handle raw and processed materials is illustrated in a new booklet from The Frank G. Hough Co., 762 7th St., Libertyville, Ill.

Some of the operations shown and described are: loading from the pit; charging conveyors; loading dump trucks; building stockpiles; clean-up work around big power shovels; moving crushing and washing plants, compressors, and other equipment; and land clearing and overburden stripping.

Among attachments illustrated are backfill blades, crane hooks, fork lifts, backhoes, snowplows, scari-

fiers, operator cabs, and special buckets. Specifications of six Payloader models are included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 314.

Dayton Pump Appointments

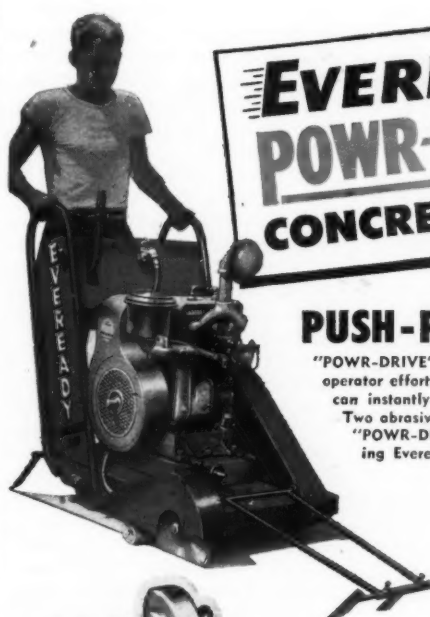
Robert N. Box and Wiley A. Jones have been made district sales representatives in the south for Dayton Pump & Mfg. Co., Dayton, Ohio.

Mr. Box, with headquarters in Laurel, Miss., will cover Louisiana, Mississippi, parts of Alabama and Florida, and the Memphis, Tenn., trading area. Mr. Jones' territory will be South Carolina, northern Georgia, northern Alabama, and the Chattanooga, Tenn., trading area. His headquarters will be in Atlanta, Ga.

Wire in Conveyor Belt Keeps Rips at Minimum

■ Ribbons of high-tensile steel wire, inserted at intervals up to 3 feet, are the feature of a new type of rubber conveyor belt developed by the B. F. Goodrich Co., Industrial Products Division, Akron 18, Ohio. According to the company, the wires act as barriers against rips which can occur during severe belt service when sharp objects penetrate the belt, become jammed, or slice the fabric. They also keep accidental rips from running the entire length of the belt. The new construction is available in a variety of belts, including all types of hot-material conveyors.

For further information write to the company, or use the Request Card at page 18. Circle No. 183.



EVEREADY POWR-DRIVE CONCRETE SAW

Ask Your EVEREADY Dealer for the Most Complete Line of Masonry and Concrete Cutting Equipment

We've taken the PUSH-PULL Out of Concrete Sawing

"POWR-DRIVE" smoothly drives saw forward at your controlled speed... saves operator effort and increases cutting footage per day. With "POWR-DRIVE" you can instantly regulate the cutting speed to your various cutting requirements. Two abrasive-coated wheels act as a friction drive in contact with both rear saw wheels. "POWR-DRIVE" is engaged or disengaged by a convenient foot lever control. See the amazing Eveready "POWR-DRIVE" Concrete Saw at your local Eveready Dealer.

PATENTED EVEREADY FEATURES

Shown at the right are three exclusive features that make EVEREADY the fastest, most efficient concrete and asphalt cutting saw. Other features are: Dashboard controls for greater ease in operation and maneuvering; blade depth control that permits sawing to a specified depth.



Two easy strokes of Hydra-Eze Handle (A) and hydraulic power lifts blade fast—straight out of cut. Quarter turn of Hydra-Eze Blade Release Lever (B) and hydraulic power feeds blade gently, smoothly into material.

BUY COMPLETE OR ADD THE NEW EVEREADY POWR-DRIVE KIT LATER

The "POWR-DRIVE" Kit comes completely assembled... only four holes—four bolts are needed to install the kit on any Eveready Concrete Saw. "POWR-DRIVE" Kits are sold only by authorized Eveready Dealers.

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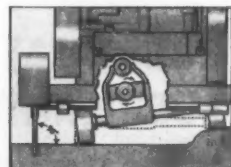
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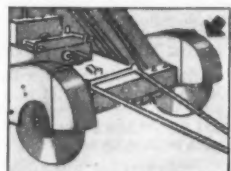
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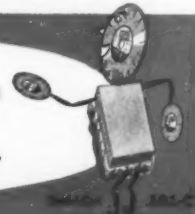


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This Winslow Binanbatch weighs out 1-yard batches of concrete and dumps them into a Jaeger 3-yard truck mixer mounted on an International truck. C&E Staff Photo

Concrete Floodwall Ha



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To PROTECT Morgan City, La., and the flat countryside to the east from floodwaters of the Atchafalaya River, as well as from hurricane tides backing up from the Gulf of Mexico, an extensive system of levees and floodwalls is being constructed in and near the city. A portion of this system, known as the Tiger Island Levee and Floodwall, was completed earlier this year. This project ties the city's existing floodwall to the recently completed Bayou Boeuf Lock. Another levee is being extended about ten miles south along Bayou Shaffer.

The contract for construction of the Tiger Island project was awarded by the U. S. Army Corps of Engineers to Sam Carline, Inc., Berwick, La. In addition to construction of the wall and levee, the project included relocation and regrading of railroad tracks and construction of a storm-sewer system for part of the city. The work was complicated by bad weather and by the proximity of many buildings and public utilities.

Morgan City lies in almost level delta country near the mouth of the Atchafalaya River. This river is the

natural bypass through which abnormal flows of the Mississippi River take a short cut to the Gulf of Mexico. Very recently two bypasses, the Morganza and West Atchafalaya Floodways, were constructed, and these are capable of diverting a great deal of excess water into the Atchafalaya Basin.

To confine these flood waters to the uninhabited area of the Atchafalaya Basin, guide levees have been constructed along both sides of the wide basin throughout its entire length. At Morgan City, the east guide levee connects to a concrete floodwall system, of which the Tiger Island Floodwall and Levee are increments.

In a typical section, the floodwall has a base approximately 2 feet thick and 5 feet 9 inches wide. On the front or river side, this base rests on a continuous sheet-pile cutoff wall which extends down to clay to prevent seepage under the wall. Near the other edge of the base, treated timber piles spaced about three feet apart are driven at a batter of 6 inches per foot. The vertical stem of the wall is approximately

ten feet high. It is 24 inches thick at the bottom and 12 inches at the top.

Stop-Log Gates

Where roads or railroads must pass through the floodwall, gates have been provided. At normal water stages, these gates are simply openings in the wall. When high water threatens, stop logs are inserted in the openings to make the closure. Standard railroad ties measuring 6 x 8 inches in cross section and 8 feet in length are the stop logs.

Openings are divided into spans of 8 feet 1 inch by setting up 12-inch WF steel-beam posts in sockets in the concrete gate sill. The stop logs then fit between the flanges of the posts. A special channel section is provided to receive the stop logs at the ends of the concrete walls. Braces for the steel posts are included in the gate assembly. Before the job was completed, each gate was completely assembled and tested. Parts were numbered and painted, and the gates were dismantled and stored on the site ready for use.

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A section of the Tiger Island Floodwall under construction. The opening will accommodate a stop-log gate when high water threatens. Photo by New Orleans District Corps of Engineers

Has Stop-Log Gates

Construction of 10-foot-high protective structure includes relocation of railroad tracks, oil pipes



These gates were turned over to the city for operation. Flood warning systems provide ample time for assembling the gates before high water reaches the city.

Storm-Sewer System

In order to provide surface drainage in the city when the river backs up through the normal storm drain outlets, a new storm-sewer system was built. This system includes 2,200 linear feet of pipe ranging in size from 18 inches in diameter to 72 x 44-inch pipe-arch. It discharges into a sump from which the water will be pumped during high river stages.

Two manually operated tide gates close off the storm sewers when necessary. The sump area is approximately 400 feet long, 75 feet wide, and averages 10 feet deep.

Another phase of the work involved relocating and regrading railroad tracks. One set of four tracks 2,500 feet in length was relocated to make room for the floodwall. In another case, the track grade was too low to get over the sill grade of the gates, and 3,500 linear feet of

this track was raised as much as 2 feet. Crushed shells, which were available locally, were used to raise and ballast these tracks.

Under normal conditions, a drag-line dug a shallow trench for the wall footings. This trench averaged just a little more than two feet deep so that the top of footings was approximately at natural ground level. A crane with swinging steel leads and a McKiernan-Terry 9B2 steam hammer then drove the piles. Steam was supplied by a trailer-mounted 45-hp boiler which burned fuel oil.

Steel sheet piling under the toe of the wall was driven through the underlying silt and sand deposits to solid clay. Lengths of sheet piles varied from 15 to 60 feet. Treated timber piles were driven to provide bearing, and lengths varied greatly with the soil conditions. The longest piling driven was 70 feet; the shortest was 32 feet.

Wall forms were built of one-inch tongue-and-groove lumber, backed with 3 x 8 studs spaced at 18-inch centers. Double 3 x 6 wales held the forms in line. Richmond Tyserus, Tycones, and Tylags tied

the forms together. Form sections were prefabricated and set in place by one of the cranes.

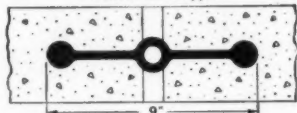
Concrete was batched from a Winslow Binanbatch setup and was mixed and delivered by two 3-yard Jaeger truck mixers. One of the mixers was mounted on a Ford truck and the other on an International. Sand and gravel aggregates were supplied by Jahncke Service, Inc., from its Bluff Creek plant and were delivered by rail. Lone Star air-entrained cement in sacks was received by rail from New Orleans.

A Lorain 41 crane with a Yaun 1-yard clamshell bucket unloaded aggregate cars and charged the 16-yard two-compartment hoppers of the Binanbatch. Cement was stored in a shed beside the plant and was dumped into the batch by hand. Mixing water was obtained from the municipal supply. The truck mixers discharged the concrete into a 1-yard Insley lay-down bucket which was hoisted to the forms by one of the Lorain cranes. Compaction was aided by a Jackson vibrator operated by a Wisconsin engine.

(Continued on next page)

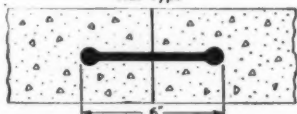
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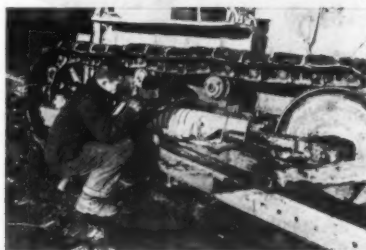
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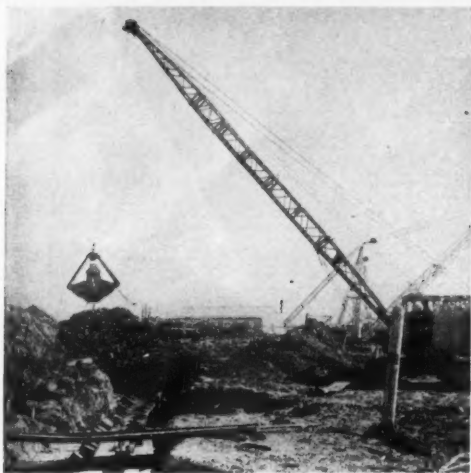
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A Lorain 50 crane with 1-yard Owen clamshell bucket cleans out the footing ditch preparatory to form setting. Sheet piling in the ditch provides a cutoff under the toe of the floodwall, while timber piles resist the thrust of the water against the wall.

C&E Staff Photo

(Continued from preceding page)

One section of floodwall was constructed in a very restricted area through an oil dock. Here it was necessary to carry several pipes through the wall to accommodate facilities for unloading oil barges. Steel sleeves were placed through the wall and welded to the sheet piling. The oil pipes were then placed in the sleeves and the annular spaced filled with steel wool. Both ends of the sleeve were caulked with an inch of lead.

To insure watertightness, copper waterstops were installed in all expansion and contraction joints of the wall and tied to the sheet piling. These waterstops are about 18 inches wide and are made of 0.032-inch copper. Concrete was cured for 14 days by covering it with wet burlap.

Levee Construction

Where there was sufficient room and where frequent openings were not required, the protective structure was built as a levee instead of as a floodwall. The levee section was 39 feet wide at the top with side slopes of 3 to 1 on the water side and 4 to 1 on the land side. Material for the levees was obtained from borrow pits, loaded with draglines, and hauled in hired trucks. Tractors with dozers shaped and compacted the material.

Most of the subsoil was of relatively impervious silt and clay, and levees could be constructed on it without danger of seepage underneath. However, for a distance of about 2,000 feet near a shell-crushing plant, the contractor encountered fine shell dust through which water seeped easily. This material varied from 3 to 20 feet in depth and was underlaid with a firm, impervious clay stratum.

To prevent seepage under the levee, a cutoff trench was excavated completely through the shell dust and at least two feet into the underlying clay. This trench, 6 feet wide at the bottom with 1 to 1 side slopes, was excavated by a Link-Belt 595 dragline using a 3-yard Hendrix bucket. As fast as the shell dust was removed, clay material was replaced in the trench and compacted to make an impervious cutoff.

Clay was obtained from a borrow pit about four miles east of the city. In the pit two draglines—a Bucyrus-Erie 50-B and a Lorain TL-25—loaded a fleet of hired trucks which hauled to the job. The material was pushed into the trench and compacted by an Allis-Chalmers HD-10 and a Caterpillar D7 equipped with dozers.

Bayou Boeuf Lock

The Tiger Island Levee and Flood-wall project starts near the junction of the Atchafalaya River and Bayou Boeuf. This bayou is a part of the Intracoastal Waterway. The levee follows the bank of the bayou to a



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CONTRACTORS AND ENGINEERS

point about a mile southeast of Morgan City, where an earth dam will close the bayou when the Bayou Boeuf Lock goes into operation. This dam and lock will prevent flood waters from backing up the bayou and flooding land to the east of the city.

The \$2,361,000 lock, which was completed early this year, was constructed by the Texas Construction Co., New Orleans, La. It is 75 feet wide, 1,200 feet long, and about 14 feet deep. Modern sector-type gates can be opened under a head of water, eliminating the necessity for reverse head gates and a filling and emptying valve system.

The lock was constructed on dry land on the south side of the bayou. Channels are now being excavated at both ends to provide access to the lock. When these are completed, the bayou, which at this point is 600 feet wide and 30 to 32 feet deep, will be closed with an earth dam located opposite the lock. This dam will be connected to the Tiger Island Levee and Floodwall, making a continuous protective system to the north. Levees are being constructed along Bayou Shaffer to carry the system at least ten miles farther south. This extension will give additional protection against water backing up behind the system.

Personnel

Superintendent of the Tiger Island project for Sam Carline, Inc., was H. V. Fondren. Engineer for the contractor was Elmer Breece. The project was supervised by the New Orleans District of the Corps of Engineers under Col. C. T. Tench, district engineer, with Roy L. Wright serving as project engineer and Donald P. Bouchereau as assistant project engineer. Henry K. Lee, headquartered at Morgan City, is the district engineer's field assistant in the territory.

THE END

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A ready-to-use product, DPS

Masterplate is applied as a dust-coat to freshly floated concrete.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 227.

Changes and Improvements In Pennsylvania Road Map

Major road relocations, the new 3 and 4-lane roadways completed last year, and roads under construction are shown in the new four-color state maps now being distributed without charge by the Pennsylvania Department of Highways. The northeastern extension of the Pennsylvania Turnpike, now under construction, as well as the completed road and its interchanges, is shown on the map. The new Memorial bridge south of Wilmington, sections of the New Jersey

Turnpike, and the projected Ohio Turnpike are also indicated.

Both the face of the map and the city maps on the reverse side chart by-passes around congested areas. Principal cities and towns are keyed for reference. Routings through 35 cities are shown in large-scale drawings on the back of the map. Pennsylvania State Police Stations are marked, and a summary of state highway regulations is also included.

The new map has been made with an accordion fold so that the motorist can open it to any desired section without having to open the map completely. Distribution of the official road map is being handled through motor clubs, tourist agencies, hotels, offices of the Pennsylvania Department of Highways, and state police stations.



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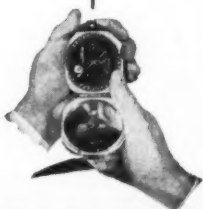
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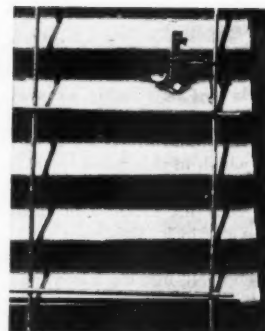
Corruform sheets are fastened to supporting bar joists by plug-welding. The operator's weight holds the overlapping corrugated sheets in place to insure a good weld.

Stud Welding Has Triple Role on Building Project

INNOVATIONS in building methods and techniques have by now become almost routine for contractors working on Denver's \$15,000,000 Mile High Center, a project similar to Rockefeller Center in New York City. The Mile High Center Building is being built with structural members fastened with high-tensile steel bolts. (See "Bolting Technique Is Used on Steelwork for Building", C. & E., July, 1954, pg. 36.) Stud welding is now simplifying the erection of prefabricated asbestos-insulated wall and window panels on this building. And the same technique is serving a dual purpose with flooring being installed in an addition to the Mile High Kennel Club grandstand.

The Mile High Center Building, designed by the architectural division of Webb & Knapp, Inc., New York, N. Y., is being built by George A. Fuller Co., also of New York City. The outside columns of the building were formed in one-story lengths by casting concrete fire-proofing around steel I-beams.

Instead of using steel framing members buried in the concrete, Universal Corp., Dallas, Texas, used end-welded studs to secure the aluminum wall and window panels. Before concrete was cast, U-shaped steel straps $\frac{1}{4} \times 2$ inches were hand-welded at four evenly spaced intervals along the edge of one flange of the I-beam. When the concrete was poured and set, the exterior sides of



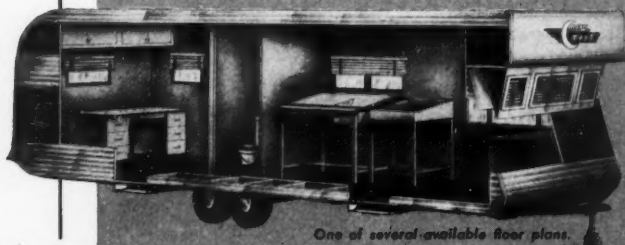
The rectangular studs used to plug-weld the Corruform sheets also anchor concrete-reinforcing mesh to the floor.

the straps were exposed and flush to the column. Two $\frac{1}{2} \times 1\frac{1}{2}$ -inch standard Nelson MG studs were end-welded to each horizontal strap. Pre-punched steel angles, which will support the aluminum and cement-asbestos skin of the building, were fastened to the threaded studs with nuts. Approximately a 100-pound shear was distributed on each stud.

Flooring Is Plug-Welded

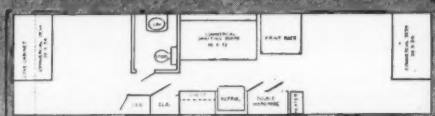
Plug-welding with rectangular studs reduced fastening costs for grandstand flooring in the Mile High Kennel Club by 15 per cent, according to an estimate made by Kenneth Hughes, Denver, structural contractor on this project. General con-

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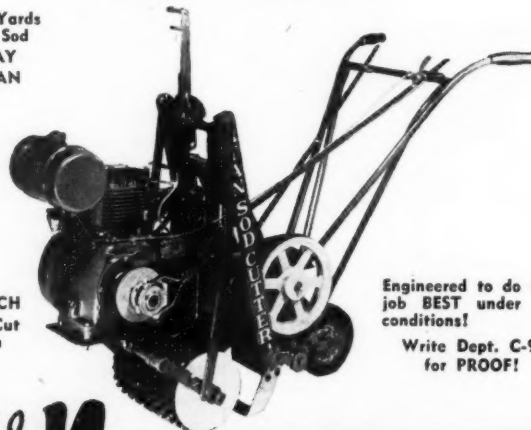
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Aluminum wall panels are held by angles fastened to studs; plug welds in sheet flooring also secure wire reinforcing



Studs are in place on the exterior sides of horizontal steel straps spaced along the edge of one flange of the I-beam.

tractor for the job was Brown-Schrepferman Co., Denver.

For this job, a single man was needed; hand-welding of washers would have required two men. Altogether, 8,500 Nelson rectangular studs $\frac{1}{8} \times \frac{3}{8} \times 1\frac{1}{2}$ inches were used to fasten more than 45,000 square feet of 20-gage steel metal Corruform to bar joists.

When the Corruform sheets were laid, marks were made on the crown of the next-to-last corrugation to indicate the location of the bar joist beneath. Studs were then plug-welded through one or two overlapping sheets, in either of the last two corrugations, with a lightweight Nelson stud-welding gun. The

A workman fastens two $\frac{1}{2} \times 1\frac{1}{2}$ -inch standard Nelson MC studs to horizontal steel straps on the face of the outside column of the Mile High Center Building in Denver. Studs will support steel angles to which wall and window framing panels are fastened.



THE END

CONSISTENT PERFORMANCE



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from all its parts. Years of know-how and
engineering have gone into the manufacture
of Hendrix Dragline Buckets. High quality materials
and expert workmanship assure consistent performance
day in and day out . . . job after job!

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

$\frac{3}{8}$ to 40 Cubic Yards

Hendrix Buckets available without perforations
on special order.

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

You SET THE
SPECIFICATIONS...



Special 4x6 Steam
Fixed Drum Winch.
Duty single line pull
4,300 lbs. at 90 FPM.

Superior-Lidgerwood-Mundy has the facilities and experience to meet them . . . either from an all-inclusive line of standard hoisting equipment or with equipment engineered to your specific requirements.

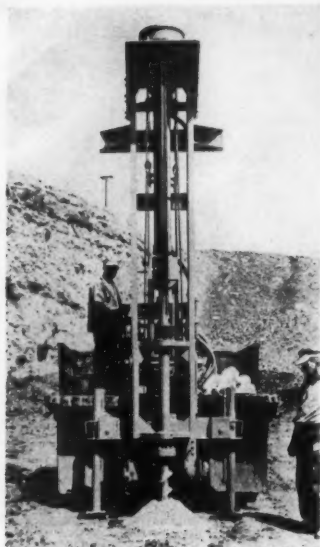
WRITE FOR BULLETINS AND CATALOGS

**SUPERIOR LIDGERWOOD
MUNDY CORPORATION**

Main Office and Works: SUPERIOR, WISCONSIN, U.S.A.
New York Office, 7 Day Street, New York 7, N.Y.

SEPTEMBER, 1954





A McCarthy auger drill.

Heavy-Duty Augers For Deep-Hole Drilling

■ Heavy-Duty auger drills that handle a wide variety of drill heads are made by The Salem Tool Co., 769 S. Ellsworth Ave., Salem, Ohio. These units are suitable for deep-hole drilling with drill heads in 6 to 8-inch sizes. Large augers are offered for drilling earth, clay, compacted sand and gravel, hardpan and shale formations. Augers with smaller diameters can be had for work in the same formations and sandrock.

The newest McCarthy drills are finding use on a wide variety of jobs: earth exploration, foundation testing, shot-hole drilling for blasting, dewatering, and digging shallow water wells. According to the manufacturer, users report drillings of up to 800 feet per day, varying with earth and rock conditions.

The units are powered by gasoline or diesel engines, or electric motors, and can be removed from the truck or half-track when not in use. Masts drop down for road travel.

For further information write to the company, or use the Request Card at page 18. Circle No. 246.

Specification Manual On Roof-Deck Concrete

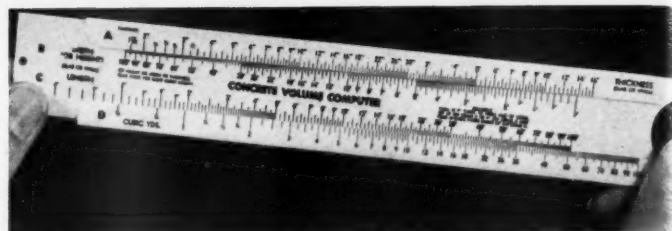
■ A comprehensive working handbook on lightweight, insulating, and fireproof concrete for roof-deck construction is available from the Perlite Division, Great Lakes Carbon Corp., 612 S. Flower St., Los Angeles 17, Calif. Six basic types of roof structural forms are covered, and seventeen drawings give construction details. Complete tables cover all basic types, on different joist spacings, with six different types of ceilings. These tables have been worked out in such detail, according to the company, that an architect planning to use a certain type of construction, on a given joist spacing and with a particular type of ceiling below, may turn to the proper table and find the slab thickness required with different Permalite concrete-mix ratios, the strengths, and the K or U factors for the whole roof-ceiling combination.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 280.

Road Federation Aids Foreign Engineer Study

A total of 103 foreign highway engineers from 24 countries will be trained in the United States this year with aid from the International Road Federation's education and training program.

Graduate study will be done by 24 of the engineers, and the remainder will be assigned to training schedules with the highway departments and to observation tours of highway projects as well as manufacturing plants.



CONTRACTORS MAY OBTAIN this hand concrete-volume computer without charge from the Stow Mfg. Co., Binghamton, N. Y. Knowing the dimensions of the slab or wall to be poured, the user can find the volume of concrete needed by making the proper setting in the computer. To obtain this device write to the company, or use the Request Card at page 18. Circle No. 315.

Opening up the



HEAP LOADS IN A HURRY. One of Julian Construction Company's seven TD-24s push-loads a new INTERNATIONAL 2T-75

near Wauseon, Ohio. Julian has 1,000,000 cubic yards of dirt to move in sub-grading 7.2 miles of the Ohio Turnpike.

INTERNATIONAL TD-24 crawler tractors, preferred by contractors on toughest phases of Ohio Turnpike construction

An estimated 29,506,100 cubic yards of earth and rock is being excavated and an estimated 46,905,000 cubic yards of borrow and fill will be moved before the 241.1-mile Ohio Turnpike is completed.

A monumental project, requiring the most powerful, most dependable crawler tractors available.

All along the Ohio Turnpike, from the eastern terminus in Mahoning County to the western terminus in Williams County, INTERNATIONAL TD-24 crawler tractors are taking over the toughest earthmoving jobs.

With 155 drawbar horsepower, the INTER-

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

NATIONAL TD-24 can conquer any big job. And the durability of every TD-24 means less maintenance, downtime, and operating expense, more profit for the owner.

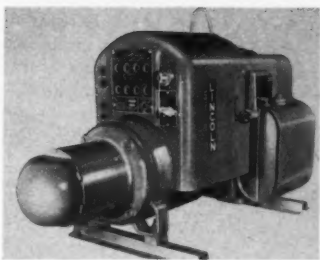
For more details on the new, complete line of INTERNATIONAL earthmoving equipment, including seven crawler tractors with 26 matched blades, two high-speed rubber-tired tractors with scrapers and bottom dump wagons, and four 4-wheeled scrapers, call your INTERNATIONAL Industrial Power Distributor today. While you're at it, arrange for a demonstration on your job of INTERNATIONAL equipment "sized" for your job.



Combination Welder And Standby Power Unit

■ A new combination welder and auxiliary or standby power unit features large capacity and simultaneous output of both welding and auxiliary current. The Weldanpower machine, developed by The Lincoln Electric Co., 2201 St. Clair Ave., Cleveland 17, Ohio, is rated as a 200-amp welder and a 4-kva continuous-duty power unit. Intermittent standby power is 5 kva.

The machine supplies a wide range of ac current for maintenance



welding to repair worn parts, hard-face machine parts, and to make replacement parts. The machine also supplies 230/115-volt 60-cycle

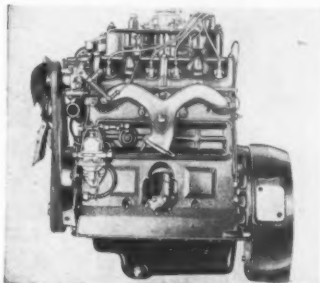
single-phase ac standby power to operate equipment such as lights, power tools, and pumps.

The Weldanpower unit is an ac alternator powered by a 12-hp air-cooled gasoline engine. For welding, the operating panel provides taps which supply ac current for use with electrodes ranging from 5/64 to 3/16 inches in diameter. A heat control is used to raise or lower the current from any one tap to suit the exact welding requirements.

For further information write to the company, or use the Request Card at page 18. Circle No. 249.

Jeep Engine Available For Powering Equipment

■ A 4-cylinder F-head engine based on designs perfected for the military jeep has been made available for industrial use by Willys Motors, Inc., 1015 N. Cove Blvd., Toledo, Ohio. The F-head is of combination valve-in-head and valve-in-block



The 4-cylinder Model 4F Willys engine.

construction. This design, the manufacturer points out, allows maximum valve diameters and increased "breathing" qualities.

Because only the intake valves are in the head, there is a rapid unobstructed flow of fuel to the combustion chamber. The intake manifold, built integral with the head for water heating, provides the best possible mixture distribution between cylinders without overheating the charge at high load.

Bore and stroke of the Model 4F is 3 1/8 x 4 3/8 inches, and the total piston displacement is 134.2 cubic inches. The maximum brake horsepower is 51 hp at 2,400 rpm and 70 hp at 4,000 rpm. Maximum torque is 111 and 91 foot-pounds, respectively. Compression ratio is 6.9 or 7.4.

For further information write to the company, or use the Request Card at page 18. Circle No. 260.

Ohio Turnpike



SMOOTHING A BRIDGE APPROACH. Largest structures on the Ohio Turnpike are twin bridges north of Akron. Over 1,500,000 cubic yards will be moved by Wilco Builders, subcontractors, Brecksville, Ohio, with two TD-24s leading the way.



LOADS THEM OUT FOR LAUNDER AND PIERCE. An INTERNATIONAL TD-24 hauls a loader on a 28 to 36-inch cut. Contract for this section is held jointly by Launder and Son, Inc., and The Pierce Construction Company, Toledo, Ohio.



HANDLES THE TOUGH ONES FOR HERKNER. Extensive drainage is required through Summit and Cuyahoga Counties. Herkner Construction Company, Cleveland, uses the TD-24 shown here to handle excavation and drainage pipe placement.



DOES MORE THAN ITS SHARE FOR CENCI. Subcontractor Nick Cenci and Sons, Inc., Columbus, Ohio, use an INTERNATIONAL TD-24 for the heaviest heaped-loading work. TD-24 recently push-loaded 450,000 yards of earth with no downtime.



SPEEDS SOIL-STRIPPING FOR SMALLEY. Approximately 3,600,000 cubic yards of earth will be moved by D. R. Smalley and Sons, Celina, Ohio. One of their three TD-24s is used to pull a loader on soil-stripping work near Milan, Ohio.



LOADING IN MAHONING COUNTY. Two of D. W. Winkelman's five TD-24s complete fast cycles in spite of soggy going south of Youngstown. Roughly three-and-a-quarter million cubic yards will be moved on this contract.

For every move in Earthmoving

ON TRACKS ...ON RUBBER

See INTERNATIONAL
"Job-Phased" equipment



INTERNATIONAL®

MAKES EVERY LOAD A PAYLOAD

*Phased Equipment—Machines designed and built to handle each major phase of earthmoving most efficiently and economically.



SEVEN GREAT INTERNATIONAL CRAWLERS...EACH WITH
MATCHED EQUIPMENT FOR EVERY JOB

Luria Engineering News

The director of engineering research and development for Luria Engineering Co., Thurston Klayton, has also been made chief engineer for the company. In this capacity, he will have charge of a 60-man engineering staff in Bethlehem, Pa., for Luria, which designs, fabricates, and constructs standardized steel industrial buildings.

Associated with the Navy as a civilian naval architect at Brooklyn and Los Angeles for seven years, Mr. Klayton has also held positions in the Wyckoff Engineering Co., New York, N. Y.; and Consolidated Western Steel Co., Fluor Corp., Parsons Engineering Co., and Empire Steel Buildings Co., all of Los Angeles.

Uses for Asphalt Coatings

■ Novel uses of asphaltic protective coatings are suggested in a booklet from The Insul-Mastic Corp. of America, 1141 Oliver Bldg., Pittsburgh 22, Pa.

In addition to rust prevention, the booklet names the following uses for Insul-Mastic reinforced asphaltic coatings: vapor-sealing thermal insulation, waterproofing building walls, dampening sound and vibration, controlling condensation, and insulating.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 186.



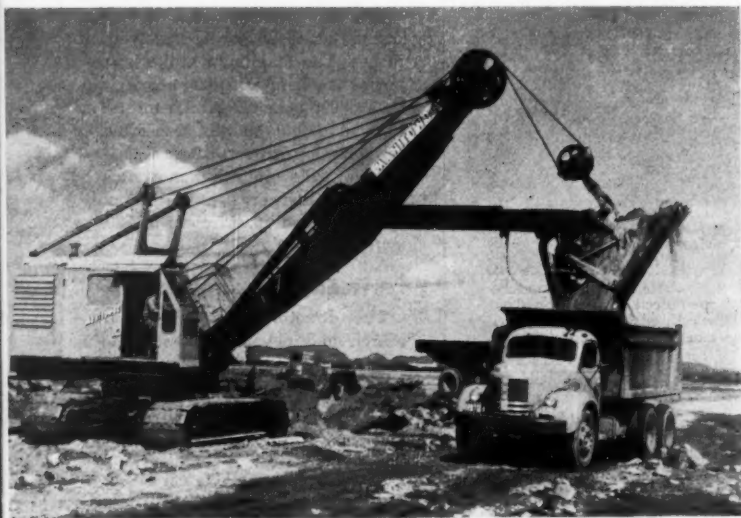
Working on the foundation for the cantilever-type hangar, a special rig with a sash-weight-type drop hammer drives a steel shell for a Franki displacement caisson. After the shell is driven, concrete is rammed into it to form a bulbous base. *C&E Staff Photos*



Silty sand material is loaded into International scrapers by a Sierra loader pulled by a Caterpillar D8 tractor. A fleet of this equipment averaged 700 yards per hour on the runway grading job.

New Giant Bombers Require Reconstruction of Air Base

Taxiways, 10,500-foot runway, double-cantilever hangar and multipurpose units are part of \$25,000,000 project



Some of the 285,000 square yards of pavement being removed under the runway contract is handled by a Manitowoc 2 1/2-yard shovel, which here loads into a Reo dump truck. The runway work is being done by Lane Construction Corp., Meriden, Conn.



Trench excavation in the runway area is done by a Cat scraper pulled by an Oliver OC-18 tractor. A. E. Williams Construction Co., Inc., Hartford, Conn., has the subcontract for earthmoving and drainage.

CONSTRUCTION activity at Westover Air Force Base, Mass., really began to hum this summer as contractors pushed their crews to keep up with tight schedules. Westover is in the midst of a \$25,000,000 reconstruction program aimed at making the base capable of handling the largest aircraft used by the Air Force.

At present, Westover is still a part of the Military Air Transport Service (MATS), a major Air Force com-

mand operating cargo-passenger aircraft. When construction is completed, the field will be turned over to the Strategic Air Command, (SAC), the long-range striking arm of the Air Force. SAC plans to use Westover as a base for the giant RB-36 bomber, a reconnaissance version of the 10-engine B-36. Because the massive plane has a 230-foot wing span and a weight of 400,000 pounds, huge new runways, hangars,



A Gradall equipped with 48-inch bucket makes a 4-foot-deep cut for wall footings for the nose hangars. Westover's reconstruction program calls for 15 of these structures to be built, each 300 feet long and 125 feet wide.

and service facilities are required.

Nearly \$16,000,000 of the proposed \$25,000,000 allocation is being spent on three contracts. The Lane Construction Corp., Meriden, Conn., has an \$8,840,000 contract to construct a 10,500-foot runway with supporting taxiways. A number of multipurpose hangars costing a total of \$4,330,000 are under way by T. C. Bateson Construction Co., Dallas, Texas. F. D. Rich Co., Inc., Stamford, Conn., is building a double-cantilever maintenance hangar for \$2,541,000. Smaller contracts cover new railroad facilities, an ammunition area, and a housing project.

Runway

The biggest job at Westover is the huge concrete and asphalt runway with five taxiways. It will be 10,500 feet long, 300 feet wide, and have a 250-foot blast pad and 1,000-foot overrun area at each end. With the exception of 1,000-foot concrete sections at each end, the pavement will be asphalt. These end sections will consist of a 15-inch-thick pad of concrete laid in 25-foot strips and sloping 1.5 per cent from the centerline. The pad will be supported on 8 inches of selected sand and gravel and about 30 inches of compacted sand fill.

Under the 4-inch asphalt surface on the main runway will be 6 inches of crushed stone, 4 inches of sand and gravel, and a variable depth of compacted subgrade. In cuts, the top 30 inches of subgrade is being compacted to 100 per cent density.

Lane's big quantities include 957,000 yards of stripping, 1,440,000 yards of excavation, 685,000 yards of sand borrow, and 285,000 square yards of pavement removal. Huge amounts of gravel and crushed rock subbase are also required.

Earthmoving and drainage work is being done as a subcontract by a joint-venture of A. E. Williams Construction Co., Inc., Hartford, Conn., and Enfield Road Construction Co., Thompsonville, Conn. Because of the good drainage conditions, the joint-venture contractors were able to use their excavating equipment earlier than is usual in New England. By March, they had a good-sized fleet of scrapers gnawing away at the gently rolling hills.

Practically all of the cuts are at the

south end of the runway. A considerable amount of borrow is required at the midpoint and especially at the north end of the runway, where a 10-foot-thick peat bog has to be removed.

New Loader

Williams and Enfield tackled the earthmoving job with a Sierra loader and a fleet of Caterpillar and International scrapers. At the start of the earthmoving work, the loader-scraper combination averaged about 700 yards per hour. The Sierra loader was pulled by a Caterpillar D8 tractor and powered by a Cat D318 diesel engine. The 42-inch-diameter disk plow easily cut into the silty sand material as the 27-foot conveyor loaded the scrapers. Scrapers were used instead of wagons to simplify grading work on

(Concluded on next page)



Concrete is chuted from Jaeger truck mixers to a foundation for one of the 15 multipurpose hangars being built by T. C. Bateson Construction Co., Dallas, Texas.



ONE DEMONSTRATION ...SOLD VOGT, Inc.

Vogt, Inc., of Okauchee, Wisconsin, witnessed a 4-Wheel Drive SHOVELoader demonstration February 11, 1954, at their washed sand and gravel pit. Mason and torpedo sand, and 1", 2" and 3" washed gravel were loaded into trucks. The SHOVELoader also demonstrated digging and loading bank run gravel with frost 2 feet deep on bank and mixed with hardpan. After the demonstration Vogt, Inc., gave three big reasons why they decided to buy the SHOVELoader.

1. The TRIPLE-ACTION bucket which breaks back 43° down low, crowds and hoists in one motion, heaping easily. Such heaping action helped load 5 and 6-yard trucks in one minute's time.

2. The forward reach of the SHOVELoader (minimum is 3' at top of lift fully dumped) made it easy to spot and peak all loads in the center of the box of all the diversified hauling equipment used.

3. The planetary reduction drive in each wheel minimized skipping of drive wheels, avoiding throwing of dirt into washed sand and gravel.

If you want the best value for every dollar you spend, see a SHOVELoader demonstration before you buy any loader. By writing The Baker-Lull Corporation, 370 West 90th Street, Minneapolis, Minnesota, you can obtain demonstration reports along with Bulletin AD-55A to prove to yourself that SHOVELoader is the new leader in loaders.

**Baker
Lull**

handling equipment

SHOVELoader

THE NEW LEADER IN LOADERS



Backfill material in a drainage trench near the runway is compacted by a Barco self-powered hammer.

(Continued from preceding page)

the fills. Lifts were compacted with Bros rubber-tire roller pulled by an Allis-Chalmers tractor.

Earthmoving for the new runway and some of the taxiways, together with most of the subbase construction, will be completed this fall.

The concrete and asphalt paving crews will take over in the spring of 1955 and will complete this work in the fall of the year. The remaining work will be finished in the fall of 1956.

T. C. Bateson's contract calls for the construction of 15 nose hangars, each about 300 feet long and 125 feet

wide. Concrete foundation work was subcontracted to Gil Wyner Co., Inc., Malden, Mass., and structural steel work to Lehigh Structural Steel Co., Allentown, Pa. Foundations were simple and Wyner found that all of the 4-foot-deep cuts for the wall footings could be made quickly and easily with a Gradall equipped with a 48-inch bucket. Foundation forms were braced against the bank, and concrete was chuted directly from Jaeger truck mixers. A Blaw-Knox combination cement and aggregate batcher charged the truck mixers. Homelite vibrators consolidated the concrete.

Bateson started work early this year and is not expected to complete the fifteen hangars until November, 1956.

The third big job now under way at Westover is the massive double-

cantilever hangar. Because of the double-cantilever design, huge loads are carried by the center columns. In the original design, bell-type caissons were called for to support these columns. Since the heavy loads and the silty sand material offered ideal conditions for the Franki displacement caisson, the Rich company proposed the method to the Corps of Engineers as an alternate. Subsequently, the Franki system was accepted at a reported saving of \$30,000.

New Type Caisson

The job required about 134 displacement caissons of 120-ton capacity. The 21-inch-diameter caissons were driven 40 feet deep in clusters of two to seven. Although some pre-boring was required to drive through a well-compacted layer of fine to coarse material, most of the work followed standard Franki procedure.

The caissons were driven with a special rig that drives a steel shell with a sash-weight-type drop hammer. When the shell is positioned, dry concrete is dropped inside and tamped to form a tight plug. The hammer is then dropped on the plug as the shell is pulled through the earth.

At the required depth, the shell is anchored to the leads, the concrete plug is knocked out, and new concrete is dumped into the shell. The hammer then drives the concrete out into a bulbous base. The shaft of the caisson is formed as concrete is tamped inside the gradually rising shell. The finished caisson has a rough shaft and bulbous base, both incased in tightly compacted earth.

Steel work on the double-cantilever hangar will be completed about the middle of 1955.

Personnel

D. H. Steinhoff is resident engineer for the New England Division of the U. S. Army Corps of Engineers.

THE END



Fleet of SWENSON-Equipped Trucks Speed Blacktop Jobs
Contractors save money with Swenson Spreaders. Write for information.
Swenson Spreader & Mfg. Co.
Lindenwood, Illinois

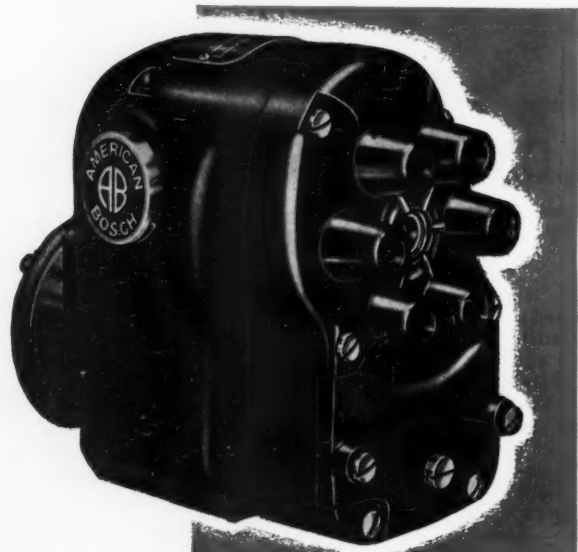
BETTER TO START WITH AMERICAN BOSCH MAGNETOS BEST IN THE LONG RUN!



There's an American Bosch Magneto precisely engineered for ALL your replacement needs . . . for the largest, spark ignited, heavy duty engines with high or low tension ignition, right down to the Magnetos required

for modern, high speed power units. In countless engine applications, these power-packed Magnetos have proved they are *better to start with and best in the long run* for earth-moving and construction equipment. From starting time measured in split second response to trouble-free ignition measured in years of service, these rugged Magnetos provide the constant, faultless spark that spells maximum efficiency at all operating speeds and loads. These are the obvious reasons American Bosch Magnetos have been in wide use for so many years as original equipment by many leading engine builders.

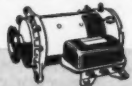
Write today for Magneto application data on your low or high tension ignition engines. We'll give you the name of a nearby AB Service Agency, a part of the most widespread and efficient Magneto service facilities in the world. American Bosch, Springfield 7, Mass.



AMERICAN BOSCH



Automotive and Aviation Magnetos



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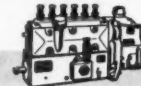
Components for Aircraft Engines



Electric Wipers and Small Motors



Ignition Coils



Diesel Fuel Injection Equipment

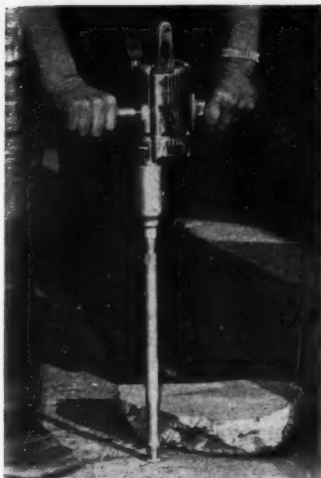
Catalog on Complete Line Of Construction Equipment

A new catalog describes the complete line of seven International crawler tractors, ranging in size and power from the 41,690-pound, 155-drawbar-hp TD-24 diesel tractor to the 7,155-pound, 32.92-drawbar-hp T-6 gasoline-powered crawler unit. Also covered are the company's Models 2T-75 and 2T-55 rubber-tire tractors with scrapers and the 2S-75 bottom-dump wagon.

In addition, two push-loaded and two self-loaded four-wheel scrapers are pictured and described, as well as 22 hydraulic and cable-controlled bulldozers, bullgraders, and angle-blade dozers.

Allied equipment or attachments for International crawler tractors, such as Drott Skid-Shovels and Superior sidebooms, are also included. The final portion of the catalog covers the 18 models of International diesel, gasoline, and gas-powered units.

To obtain this literature write to Consumer Relations Department, International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18. Circle No. 173.



The Demo electric hammer-drill.

Electric Rotary Hammer For Concrete Drilling

■ A new electric portable rotary hammer-drill, with a detachable bit for horizontal and overhead drilling of reinforced concrete, is offered by the Demo Tool Corp., 8735 Melrose Ave., Los Angeles 46, Calif. Featuring a simultaneous hammering and rotating action, the Demo Model DL-375S hammer-drill rotates at 1,000 rpm and strikes 6,000 blows per minute.

The one-man-operated drilling tool is powered by a 115-volt 5-amp ac-dc 60-cycle Thor electric motor which requires no transformer or rectifier. Using a carbide-tipped bit, the machine drills holes from 3/16 inch to 1½ inches in diameter through all materials, including steel-reinforced concrete, without change of bits or drills. Coupled core tubes enable the drill to penetrate to a depth of 40 feet.

The tool weighs 9½ pounds and is 15 inches long. Operating pressure is 10 to 15 psi in all applications.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 277.

Two-Way Communication Between Office and Job

■ How two-way radio communication between the home office and men in the field can shorten construction schedules is described in literature from the Radio Corp. of America, Front and Cooper Sts., Camden 2, N. J. The folder discusses the use of a typical RCA mobile radio consisting of a transmitter-receiver that mounts in the truck cab and a speaker and controls that fit under the dashboard.

A typical use of the two-way radio is for rerouting trucks or rescheduling work on short notice. Radio also makes it possible to contact any job site and any equipment spread quickly without spending hours on the road. Heavy equipment can also be shifted from job to job more directly.

The literature uses a typical case history of a company employing the mobile communication system to show the scheduling advantages gained.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 203.

Hyster Promotes Smith; Forms European Division

Wilton G. Smith, former coordinator of the used lift-truck program, has been promoted to the position of manager of the New York export office by the Hyster Co., Portland, Oreg.

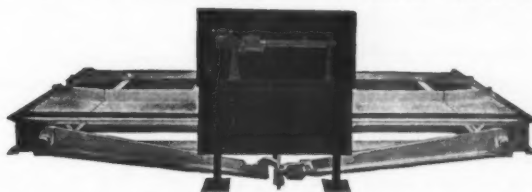
A veteran of eight years' service with the company, Mr. Smith has served as retail salesman, district sales manager, and as New York, N. Y., and Washington, D. C., representative. He will succeed A. E. Betts at the New York headquarters at 90 West Street. Hyster manufactures lift trucks, Straddle trucks, and tractor and logging tools.

Following the establishment of its factory in Nijmegen, The Netherlands, Hyster formed a European division of the export sales department in that city.

The head of the division is Boris J. Glavash, who has been associated with the manufacturer of lift trucks

for six years as sales engineer and company representative in South America.

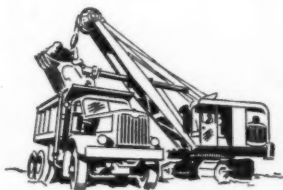
WINSLOW—PORTABLE TRUCK SCALE "THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY
P. O. Box 1198 Terre Haute, Indiana



*"How we solved
the problem
of grease on
clutchbands..."*



A large water and sewer contractor, operating 25 shovels, draglines and tractors, faced an unusual problem — under heavy loads, grease was melting out of bearings and running down over the clutch bands.

Wrong Grease Being Used...

Sinclair Lubrication Engineer R. D. Bangham heard about it during a routine call. "I suspected that the wrong kind of grease was being used," he reports, "and an examination confirmed my belief. Knowing the heavy load and high temperature conditions the bearing lubricant must face, I recommended Sinclair LITHOLINE®."

The Superintendent Agrees...

"The job superintendent agreed to a trial run. Two weeks later, he told me that Sinclair LITHOLINE did the job so well that he was ordering more LITHOLINE. He told me that on his next job he would use Sinclair products 100%, and would recommend that his fellow superintendents do the same."

Why not give a Sinclair Lubrication Engineer the opportunity to help with your lubrication problems? There's no obligation. See your Sinclair representative, or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR LUBRICANTS

AVOID LEGAL PITFALLS

Associated Contractors Were Not Jointly Liable

THE PROBLEM: Road contractors A and B were awarded a joint contract, under which A was to do the grading and B the paving. A single check was to cover work done by both, but each profited only from his own work, and neither had control over the other. Plaintiff, an automobile passenger, was injured through defective condition of the road pro-

duced by the grading contractor. The paving contractor had nothing to do with that part of the job. Was the latter jointly liable with the paving contractor for the injury to the plaintiff?

THE ANSWER: No. (*Denny v. Garavaglia*, 52 N. W. 2d 521, decided by the Michigan Supreme Court.)

However, the driver of the car was denied right to collect damages on the ground that his own careless driving contributed to his injury.

Material Lien Angle

THE PROBLEM: Construction materials were packaged on reels, which were separately priced under an agreement that the contractor-buyer could return them for credit. As to reels not returned, could the seller of the materials hold the contractor's surety liable on a bond binding the contractor to pay for lienable items of materials furnished him for the particular job?

THE ANSWER: No. (*Kaiser Aluminum & Chemical Sales, Inc. v. Hartford Accident & Indemnity Co.*, 117 Fed. Supp. 471, decided by the United States District Court, Western District of Missouri.)

The court noted that, as a general rule, a lien may be enforced for materials which, although not incorporated into a structure or improve-

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

ment, are actually or practically destroyed or rendered worthless in the construction. But here the reels were to be returned to the materialman.

The court distinguished a case decided by the Missouri Supreme Court (*Glencoe Lime & Cement Co. v. Polar Wave Ice & Fuel Co.*, 184 S. W. 952) where it was decided that the refund price of unreturned cement sacks was a lienable item because the price of the cement included the sacks, subject to the refund privilege.

Adjustment of Claims On Federal Projects

THE PROBLEM: A federal housing construction contract provided that the contracting officer's decisions on disputed questions of fact should be final, subject to review by the department head. Was a determination by a department representative, as to the amount of damages to which the contractor was entitled on account of being delayed in performance by the government, binding on the United States Court of Claims?

THE ANSWER: No. (*Continental Illinois National Bank & Trust Co. of Chicago v. United States*, 113 Fed. Supp. 97, decided by the United States Court of Claims.)

The court cited its previous decision that the standard contract provision involved cannot reasonably be interpreted as giving administrative officials power to make a binding decision for or against a contractor as to amount of damages sustained. (*Anthony P. Miller, Inc. v. United States*, 77 Fed. Supp. 209.)

Effect of Fraud

THE PROBLEM: Where a third party's rights are involved, can one who has signed a contract avoid liability to the third party on the ground that he was fraudulently induced by the second party to sign?

THE ANSWER: No. (*Pierce v. Wright*, 256 Pac. 2d 1049, decided by the California District Court of Appeals, First District, Division 1.)

A personal surety on a performance bond was declared to be liable even if—contrary to the proof—he was induced by the owner to sign the bond while intoxicated.



WATCH OUT FOR KIDS!

Ford Master-Guide Power Steering provides boulevard steering ease even under rough off-road conditions.

Now! Steering effort cut 75%

New Ford Master-Guide Power Steering reduces manual effort as much as 75%, cuts road shock, helps driver get more work done!

FORD, pioneer in driver comfort with the Driverized Cab, now offers Power Steering for still greater ease of control. New Master-Guide is standard on new Tandem-Axle models with Cargo King V-8 engines, available at extra cost on most other BIG JOBS.

Master-Guide practically frees the steering wheel from tiring road shock. A full-time system, it supplies up to 75% of the effort required for steering... a real boon in parking, maneuvering, or off-road driving. By reducing driver fatigue, it increases work output and lowers your over-all trucking costs.

For complete information, see your Ford Dealer today! Or write: Ford Division, Ford Motor Co., Dept. T-10, Box 658, Dearborn, Michigan.



Power Steering is standard on this new Ford T-800 Tandem-Axle BIG JOB. Factory-built for low first cost, the T-800 hauls 60,000 lbs. GCW, carries 40,000 lbs. GVW. Short-Stroke, Low-Friction 170-h.p. Cargo King V-8 delivers up to 41% more horsepower per cubic inch displacement than other engines in its class, for gas-saving efficiency.

SAVE WITH ALL THREE!

1. Gas-Saving Power!
2. Driver-Saving Ease!
3. Money-Saving Capacities!

And... Ford Trucks last longer, too!

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TRIPLE ECONOMY
TRUCKS



KIESLER
Since 1892
2-LEVER ARM
CLAM SHELL BUCKETS
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ON BOTH SHELLS
"A PAYLOAD EVERY TRIP"
The ONLY Bucket that DIGS-IN
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CONTRACTORS AND ENGINEERS

Crane Electric-Wire Contact Accidents

THE PROBLEM: While a crane was being removed from mine premises, it contacted an uninsulated high-tension service wire which was 30½ feet above ground. Plaintiff, assisting in loading the crane and other equipment owned by him on a trailer, was injured by the electric contact. Did the evidence at the trial of his suit for damages against the electric power company justify an award of \$3,500?

THE ANSWER: No. (Kentucky & West Virginia Power Co. v. Adams, 267 S. W. 2d 717, decided by the Kentucky Court of Appeals.)

The Court of Appeals ordered the suit dismissed on the ground that the circumstances did not compel the power company to foresee that such an accident would happen at the particular place, especially since the wire was strung so high above the ground.

The court differentiated the case from one where the same court had upheld judgment for damages for electrocution of a construction worker who lifted a supposedly insulated 110-volt wire which was 15 feet above ground, in attempting to move a power shovel beneath the wire. (Kentucky-Tennessee Light & Power Co. v. Priest's Administrator, 277 Ky. 700, 127 S. W. 2d 616.) In that case the wire had been strung specially for use in the construction work being carried on, and the deceased had reasonably believed that the wire was insulated.

In another case decided by the Court of Appeals (Blackwell's Administrator v. Union Light, Heat & Power Co., 265 S. W. 2d 462), it was decided that the power company was liable for an accident caused by a construction crane coming in contact with an uninsulated wire 36 feet above ground. But there the wire had been relocated with a special view to its use in connection with the construction operations.

Material on Roadside Was Cause of Accident

THE PROBLEM: A motorist was injured when his car went momentarily out of control and struck construction material piled on the shoulder of a traffic highway without permission from the public road authorities. Did this construction material constitute such wrongful obstruction as to make the contractor liable for the motorist's injury?

THE ANSWER: Yes. (Copeland v. Public Service Company of Indiana, 108 N. E. 2d 273, decided by the Indiana Appellate Court.)

The opinion seems to suggest that



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Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade of slope on which he is working.

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SEPTEMBER, 1954

it is important for the contractor on a job to secure permission to pile material close to traveled ways that are open to traffic, and as far as possible to avoid piling so close to those ways as to endanger vehicles which may accidentally leave the pavement. In this case electric poles were piled within 2 or 3 feet of the edge of pavement.

Priority of Liens

THE PROBLEM: Where a material-man's lien under Alabama law was perfected before a federal tax lien accrued against the same property, did the material lien have priority?

THE ANSWER: Yes. (United States v. Albert Holman Lumber Co., 208 Fed. 2d 113, decided by the United States Court of Appeals, Fifth Circuit.)

Extra Work Claims

THE PROBLEM: Apart from the fact that a sewer contractor seemingly was prevented from collecting additional pay for work called for by plans and specifications, which he had not sufficiently examined, was his claim properly denied because he failed to comply with the contract clause, providing that no charge should be made for extra work not done "upon a written order from the engineer pursuant to authorization by the City Council"?

THE ANSWER: Yes. (Bares v. City of Portola, 269 Pac. 2d 239, decided by the California District Court of Appeals, Third District.)

The court said that the clause was clearly intended to permit the Council to have such control over the project as to keep the cost within

limits contemplated when the improvement was originally provided for—particularly when the electors voted for a certain amount.

Work Elimination

THE PROBLEM: A contract to demolish a city viaduct contemplated removal of street railway tracks as a priced item, but a clause permitted omission of any item found to be unnecessary. On removal of the tracks by the street railway company pursuant to a franchise requirement, did the city have a right to eliminate the specified item?

THE ANSWER: Yes. (Frazier-Davis Construction Co. v. City of Birmingham, 207 Fed. 2d 732, decided by the United States Court of Appeals, Fifth Circuit.)

(Continued on next page)



C. L. Gleason, Chief Construction Engineer, Iowa State Highway Commission, designer; J. D. Armstrong Co., Ames, Iowa, builder.



Machine is run entirely by air—even pneumatically-propelled. Shoulder is first sloped to facilitate its operation.

Jaeger air power supplies the wallop

breaking 70,000 ft. of curb at 10c a ft.

Breaking 600 ft. of concrete curbing per hr., at a cost of only 10c a ft. compared to over 35c by other methods, was achieved by Hallet Construction Co. on the widening of 70,000 ft. of Highway 150 between Independence and Walker, Iowa. This low cost and high production was obtained by means of a specially-designed curb breaker powered by a Jaeger "Air Plus" compressor. The

machine is run entirely by air—even pneumatically-propelled.

On any job where air is used, the 15% to 25% higher "new standard" ratings of Jaeger Air-Plus compressors insure the higher volume of air required to operate at full efficiency.

And they produce the additional air at moderate temperatures, with notably low fuel consumption and, we believe, the lowest cost of upkeep. Ask your Jaeger distributor to show what he can save you on air and air tool operation—or send for Catalog.

Jaeger Standards:	75	125	185	250	365	600
Old Standards:	60	105	160	210	315	500

THE JAEGER MACHINE COMPANY

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PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS • PAVING MACHINES

Third-Party Rights

THE PROBLEM: A storm-sewer construction contract specified that the contractor should be liable, and pay, for loss or damage caused by the work. Did this render the contractor directly liable to owners of adjacent property for damage done in the course of boring and blasting operations?

THE ANSWER: Yes. (Keefer v. Lombardi, 102 Atl. 2d 695, decided by the Pennsylvania Supreme Court.)

The opinion dealt with the distinction between the obligation of a contractor to indemnify an owner against liability to a third person and an obligation of the contractor directly to the third person. The contract in this case, although not explicitly giving third parties the right to sue the contractor, was read by the court as implying that right.

Adjacent Owners' Rights

THE PROBLEM: Where surface water drainage on a large home building project caused debris and silt to be deposited upon adjacent land, was the contractor liable to the adjacent owners for lost value of the use of the land as well as for the cost of restoring the land to its former condition?

THE ANSWER: Yes. (Superior Construction Co. v. Elmo, 102 Atl. 2d 739, decided by the Maryland Court of Appeals.)

Test-Hole Drilling

THE PROBLEM: A driller was employed to drill a test hole on land which his employers planned to buy, to determine whether fill would be encountered in constructing foundation for a projected building. He reported drilling five 16-inch holes from 5 to 6 feet in depth without encountering fill, except for a surface layer of 12 to 16 inches. When foundation excavation began, it was found that the fill was 5 or 6 feet deep. (1) Was the driller liable in damages on the ground that he was either negligent in performing his contract or had fraudulently misrepresented underground conditions? (2) Could the employers hold him liable for the difference between the actual cost of constructing the foundation and the lower cost that would have been incurred had he accurately reported subsurface conditions, the employers having discovered the actual conditions when excavation had barely begun?

THE ANSWERS: (1) Yes. (2) No. (Gagne v. Bertran, 264 Pac. 2d 641, decided by the California District Court of Appeal, Second District, Division 2.)

On the first point, the court decided that the facts of the case did not show a warranty by the driller as to underground conditions, and that his liability must be based upon a theory of negligence or fraud.

On the second point, the court noted that the employers discovered the existence of the actual fill when a single trench 10 or 15 feet long was dug. That enabled them to make a choice: they could abandon the proposed purchase of the land and the building project and hold the driller liable for their actual loss resulting from his negligence or misrepresenta-

tion, or they could do what they did—proceed with the work at a cost for the foundation of double what had been contemplated. "But", said the court, "in circumstances such as these, it is manifestly unfair to impose liability for this extra amount upon defendant in the absence of any showing that it was necessary to make such an outlay to avert greater loss or damage. . . . The essential fact is that it was their own independent choice after full knowledge, rather than defendant's antecedent fraud or negligence, which was directly responsible for the expenditures made subsequent to their discovery of the fill on the lots. . . . The law will not countenance the ballooning of costs against a wrongdoer at a time when the injured party is in a position to lessen his damage."

Valuing Used Equipment

THE PROBLEM: Old paving equipment had been stored for several years by the owner and was unauthorizedly turned over by third persons to a junk company. In the owner's suit for damages against the company, in which he claimed that the equipment was serviceable and the company argued that it was mere junk, did the trial judge err in telling the jury that the equipment should be valued according to its special worth to the owner?

THE ANSWER: Yes. (Rosenfield v. White, 267 S. W. 2d 596, decided by the Texas Court of Civil Appeals, Dallas.)

The higher court declared that the equipment should be valued according to what similar equipment in the same condition could be bought on

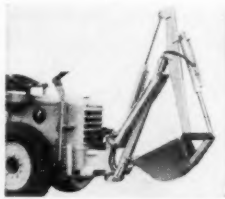
the second-hand market, regardless of any special value such equipment has to the owner.

Federal Labor Law

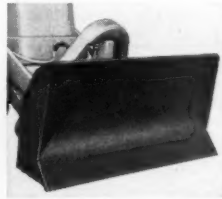
THE PROBLEM: Was a contractor's watchman on the construction of an expressway to be used in interstate commerce entitled to the benefit of minimum and overtime wage provisions of the Federal Labor Standards Act?

THE ANSWER: No. (Van Klaveren v. Killian-House Co., 210 Fed. 2d 510, decided by the United States Court of Appeals, Fifth Circuit.)

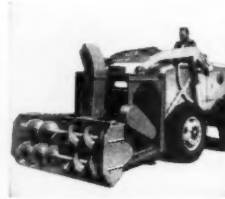
The court cited numerous decisions of U. S. federal courts to the effect: Persons engaged in the maintenance or repair of interstate highways are covered by the Act, but not employees on unopened highways.



Back Hoe makes a "PAYLOADER" a double-duty digger.



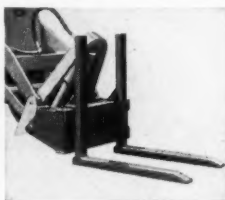
Backfill Blade is available for most "PAYLOADER" sizes.



Rotary Plow has its own engine — loads or throws snow.



Operator Cabs for greater comfort, winter or summer.



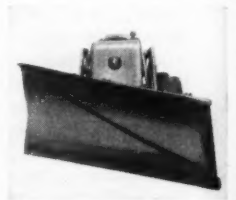
Fork Lift has adjustable fork-spacing for many unit loads.



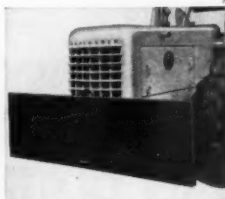
Scarifier loosens tough soil for faster, easier handling.



Pick-up Street Sweeper attaches on bucket — dumps its loads into trucks.



Blade Plows are available — both rigid and reversible, trip blade types.



Pusher Plate — a convenient attachment to spot cars.



Winch for rear-end mounting — for hoisting and hard-to-reach pulls.



Land Clearing Blade for digging out boulders, brush, stumps.



4-wheel-drive "PAYLOADER" models, with V plow are proven snow fighters for both country and city highways . . . have power to handle heavy snows . . . maneuverability for fast alley-clearing.



New Scissors Jack For Heavy Equipment

■ A new heavy-duty hydraulic jack designed for use in heavy-equipment maintenance is announced by the Hydraulic Frame Jack Co., 8111 S. Western Ave., Los Angeles 47, Calif. The Saf-T-Lift scissors-frame jack has a wide base and a weight saddle designed for stability. Weighing 20 pounds, it is rated at a 1½-ton capacity with a lift range of from 4½ to 20 inches.

Because the jack will depress to 4½ inches, it can be used for installing engines, transmissions, and other heavy parts, as well as for tire and wheel work. A safety overload valve sealed into the self-contained hydraulic unit prevents possible collapse from overloading.

The basic hydraulic unit of the



jack can be made in any size or capacity desired for a wide variety of uses.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 195.

Line of Compressors Offers Variety of Models

■ A new bulletin illustrating three types of air compressors made by Schramm, Inc., West Chester, Pa., is available from the company. Specifications cover the Pneumapower, the self-propelled Pneumatractor, and the Unistage models. Each type of unit covers a definite need, and the literature lists recommendations for use.

The Pneumapower units, with a decided weight advantage, are particularly suitable for general construction work. They are ideal for truck mounting because the skid-mounted model, unlike power-take-off assemblies, can be placed in any position on a truck.

The self-propelled Pneumatractor provides a complete mobile air sup-

ply and is used for operating a varied assortment of auxiliary units.

The Unistage models are available either gasoline-engine or diesel-engine driven. In these units, the engine and compressor are mounted in the frame as a single rigid unit.

To obtain this literature write to the Company, Dept. ADM, or use the Request Card at page 18. Circle No. 196.

New Arc Welder Has Air-Cooled Engine

■ With the addition to their line of a new 250-amp arc welder with a 4-cylinder air-cooled engine, Hobart Brothers Co., Dept. 205-h, Troy, Ohio, now offers a choice of liquid or



air-cooled engine-driven 250-amp welders.

The generator of this new welder is of the multirange type, and is directly connected to a Wisconsin Model VF4 engine. A convenient control panel is located at the generator end of the unit. A power outlet receptacle with an output of 2-kw dc at 70 volts operates lights and power tools when the unit is not being used as a welder.

For further information write to the company, or use the Request Card at page 18. Circle No. 241.

Patapsco River Borings Made for Baltimore Tunnel

The first test borings for the Cross-Harbor tunnel in Baltimore City were made last month, with Governor McKeldin operating the boring rig which brought up the first dry samples. Borings to determine the nature of the harbor bed and the soil at the tunnel's approaches are being made by Raymond Concrete Pile Co., New York, N. Y. Bids for construction of the tunnel are expected to be requested early next year.

The tunnel, running under the Patapsco River between Fairfield and Canton, is expected to relieve much traffic congestion in the city. In addition to the south and west approaches and interchanges at the Baltimore-Washington Expressway and at Potee St., the project will require construction of four interchanges on the north approach to the tunnel.

New Lufkin Salesman

Earl A. Oldham has been appointed to represent the Lufkin Rule Co., Saginaw, Mich., manufacturer of precision tools and instruments, in San Francisco, northern California, and Nevada. The new west coast salesman was connected with hardware firms in San Francisco and San Jose, Calif., before joining Lufkin.



Crane Hook quickly mounted to handle pipe, bars, timbers, etc.



PAYLOADER

tractor shovels work for you
the whole year through

When you buy a standard "PAY-LOADER" you're investing in a machine so versatile that you can use it 12 months of the year — that can dig, grade, spread, pile and load dirt . . . that can handle materials and load snow.

In addition a variety of special buckets, attachments and accessories are available so you can use your "PAYLOADER" for more and special jobs.

For information on the complete, proven "PAYLOADER" line plus ALL the special equipment available, see your Hough Distributor, or write The Frank G. Hough Co.

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Please send me more "PAYLOADER" information.

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☐ have distributor call

☐ send information on all seven models

☐ send information on all attachments.



PAYLOADER
THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY-INTERNATIONAL HARVESTER COMPANY



Standard buckets can be used to load dirt or snow, but special larger buckets are also available for snow-handling.

Data on Wire-Rope Cutter

■ Literature describing a portable tool that cuts wire rope by a hammer-blow cutting force is available from the Montgomery Mfg. Co., 24 Austin St., Newark 5, N. J. The hammer-blow wire-rope cutter slices the rope between three round blades,

one on top and two in the base. This has the advantage of keeping the rope round after the cut is made so that there are no frayed edges.

Three models with capacities of 1/2, 1, and 1 1/2 inches are listed.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 204.



CAMPBELL DETACHABLE CABS

assure **on your tractor**

- FULL PROTECTION
- FULL VISIBILITY
- FULL PRODUCTION

With a CAMPBELL DETACHABLE CAB on your tractor, your operator can work in any kind of weather—no work stoppage. All cabs have special, light-weight safety glass used throughout.

You will find a detachable cab available for many types of tractor models. Cabs are handled by your industrial tractor dealer.

For complete information on cabs to fit your needs write:

Campbell Detachable Cab Co.
WAUCONDA ILLINOIS



Double the Life of Earth-Moving Equipment by **Hard-Facing**

Trencher teeth stay sharper 2 to 3 times longer when hard-faced with HAYSTELLITE tungsten carbide rod. The hard-facing material protects the teeth from severe abrasion as they tear through rock, sand, shale, and clay at high speeds. HAYSTELLITE tungsten carbide has good shock resistance, too, and won't chip off under sudden impact.

On this job, the teeth were made of a tough vanadium steel and faced with a thin layer of HAYSTELLITE tube rod. The combination of a tough base metal and an extremely hard, wear-resistant surface helped to double the continuous service life of the trencher. Other earth-moving equipment

subjected to abrasion and impact can be protected in the same way. Bull-dozer blades, dipper teeth, post-hole diggers, road disks and plows, will all operate for long periods of time, at low maintenance cost, when hard-faced with HAYSTELLITE tube rod.

Your local dealer carries a complete line of HAYNES hard-facing alloys. He will be glad to recommend a HAYNES rod especially designed to resist abrasion, corrosion, impact, erosion or heat. Ask him for descriptive literature. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana, for full details.

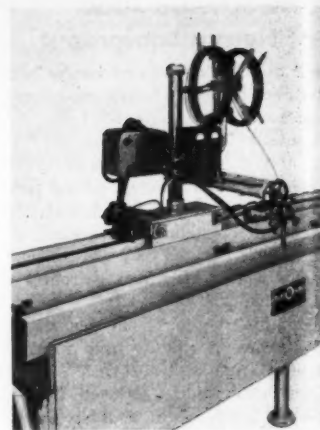
See... Your local Haynes Stellite Dealer
or
Write... to Haynes Stellite Company

"Haynes" and "Haystellite" are registered trade-marks of Union Carbide and Carbon Corporation.

Thompson-Starrett Acquires Roberts & Schaefer Co.

Thompson-Starrett Co., Inc., builder and contractor of New York, N. Y., has acquired Roberts & Schaefer Co., a 50-year-old engineering, construction, and manufacturing company of Chicago, Ill. Under the agreement, Roberts & Schaefer New York Securities Corp. will be merged into Thompson-Starrett.

Since the firm was established in 1899, Thompson-Starrett has completed more than a billion dollars worth of construction. Among New York landmarks it has erected are the Woolworth Building, the Waldorf-Astoria Hotel, and the American Stock Exchange. Other projects include the Sears, Roebuck buildings in Chicago.



The Mir-O-Col rail builder.

New Welding Machine For Rebuilding Parts

■ A new automatic rail-welding machine has been announced by the Mir-O-Col Alloy Co., 308 N. Avenue 21, Los Angeles 31, Calif. Designed primarily to rebuild or hard-face extra-heavy and large sections such as crawler tracks, shovel pads, and grader and dozer blades, the Mir-O-Col K-10 machine can weld 1 to 100 inches of bead per minute. The unit, with 30-foot table, can also be used to fabricate large sections, such as pipe, I-beam, and structural pieces.

Starting and stopping of the arc and flow of wire are automatic. Cam trips, which can be preset by the operator when welding tracks, automatically cut off power as the head passes between links. A single lever shifts the trips so that the opposite side of the track can be rebuilt without resetting each individual cam. Welding power is supplied by a 625-amp constant-potential unit.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 187.

Precast-Concrete Roof Deck Stands Up Under Fire Test

Properly sealed precast-concrete roof slabs, when exposed to fire, will not buckle and permit inflammable roofing materials to drip into flames within the structure, according to a fire-test report made by the Pittsburgh Testing Laboratory to a group of concrete roof-deck manufacturers.

The two-hour test was held at the Porete Mfg. Co., North Arlington, N. J., and conducted in an 8 x 8-foot furnace of concrete blocks lined with fire brick. Three 2 x 8-foot channel-shaped slabs formed the roof, and their open ends were sealed with cement. Joints were sealed with mastic, 3 1/2 inches wide and 1/4-inch thick at the center and feathered thin at the edges. A 1-inch-thick insulating material was applied between the slabs and the four-ply felt and pitch roof.

At no time during the test did the roofing atop the channel slabs catch fire, and there was no evidence of roofing materials dripping between the roof joints sealed with asphalt-asbestos mastic. Maximum deflection of 2 3/4 inches when the three oil burners were turned off was reduced to 2 1/2-inches after the chamber had been allowed to cool to 500 degrees F.

CONTRACTORS AND ENGINEERS



The Air-Brella, covering the operator, provides circulated air and shade.

Device Protects Driver By Circulating Air

■ A new device that puts a wall of fast-moving air around the operator of a tractor and at the same time provides shade and coolness is announced by The Farmhand Co., Hopkins, Minn. The curtain of air also keeps dust, insects, fumes, and spray or dusting chemicals away from the driver.

The Air-Brella consists of a spun-aluminum bonnet 33 inches in diameter at the bottom, tapering to 13 inches at the top, and mounted on a telescoping steel tube. A 12-inch electric fan in the top of the bonnet draws air past a deflector plate, which directs it down along the inside contour of the bonnet in such a way that it surrounds the operator yet does not blow directly on him. The 32-pound unit is adjustable vertically and horizontally, and is powered from the battery of the machine upon which it is mounted.

For further information write to the company, or use the Request Card at page 18. Circle No. 228.

New Quarterly Magazine On Excavating Machine

■ A new quarterly magazine written for the men who own and operate Gradall machines is announced by the Warner & Swasey Co. The new publication will bring news about jobs featuring this equipment, stories telling how other operators are using their machines, and information to help the contractor do a better job of operating and maintaining his own machine.

Contractors are invited to submit photos of Gradalls in action, and these will be paid for if acceptable for publication.

To be placed on the publication's mailing list, write to Edward L. Murray, editor, "The Gradall Man", the Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 265.

Concrete-Floor Laying

■ A new booklet describes how the Kalman Floor Co., 110 East 42nd St., New York 17, N. Y., installs heavy-duty concrete floors. The booklet details the company's absorption-process method of installation in a step-by-step pictorial sequence.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 262.

M-C&S Plans to Acquire Marion Power Shovel Co.

The directors of Merritt-Chapman & Scott Corp., New York, N. Y., and Marion Power Shovel Co., Marion, Ohio, have ratified an agreement which will give M-C&S a major interest in Marion through an exchange of shares.

Acquisition of Marion Power Shovel Co., would be another step in Merritt-Chapman & Scott's diversification program. Currently, M-C&S is engaged in steel production, marine salvage, and derrick heavy hoisting.

If the agreement is approved, arrangements will be made for an exchange of shares on the basis of three shares of M-C&S common for two shares of Marion common.

Marion, manufacturer of a variety

of excavating equipment, recently acquired a controlling interest in the Osgood Co., Marion, Ohio, which makes a smaller line of power shovels and cranes, together with steel castings. As part of its plan, Merritt-Chapman & Scott will also offer to acquire outstanding stock of the Osgood organization not held

by Marion. The latter offer will provide for an exchange of stock on the basis of two shares of M-C&S common for three shares of Osgood Class A and B stocks, but this offer will be conditional upon Merritt-Chapman & Scott acquiring a substantial interest in the Marion company.

Trailer-Mounted Floodlight Unit NITE-HAWK

MAKE NIGHT HOURS PAY WITH NITE-HAWK

Four 80,000 c.p. flood lights raise to 8½ ft.—aim in all directions. Control panel has duplex receptacles for extension light and power tool lines—voltage regulator—circuit breaker—fused circuit.

Tows at highway speeds on heavy-duty trailer with leaf springs—retractable caster wheel. This is the finest, most flexible unit available. Also low-cost, dependable 500 watt to 20 k.w. gas-electric plants.

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WINPOWER MFG. CO.

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NEWTON, IOWA

Powered by Wisconsin 4 cylinder, air-cooled engine.



TODAY'S FAST-MOVING CONSTRUCTION JOBS call for nimble haulers like this new GMC M470—shown here equipped with a 5-yard Heil dump body. Its 145 horsepower comes from GMC's famed "302" engine—pound for pound

the mightiest in gasoline truck history. And its extra hustle's due to the timesaving abilities of the world's first 8-speed Hydra-Matic Drive. Little wonder it's a top choice on any job calling for dependable 22,000 GVW hauling.

You make shorter work of any job with Hydra-Matic* GMC's

THERE'S no mystery about it. These great new GMC's simply step up your pace on those time-killing routines that slow down any job using ordinary trucks.

Take the incessant stop-and-go—the slow-motion maneuvering on the job-site.

Hydra-Matic's full-torque self-shifting eliminates the lag at every gear-change—avoids all those momentum losses. Every start—every pickup in speed—is quicker. That alone's a healthy timesaver.

Hill-climbing goes at a smarter clip. For these GMC's deliver full pulling power *automatically*—and top the toughest grade without a break in stride.

And you save more than time. There's no conventional clutch to go bad—or

even need minor adjustment. Axle and drive line can't be damaged by shock-loading. Brakes and tires last longer. In fact, all maintenance needs—and maintenance costs—are less.

Keeps Drivers on the Beam

A Hydra-Matic GMC makes things as easy for the driver as for itself. He avoids all that clutch-pedal hopping—those hundreds of daily fights through a gearbox. Less tired—more alert—he's bound to do a better job.

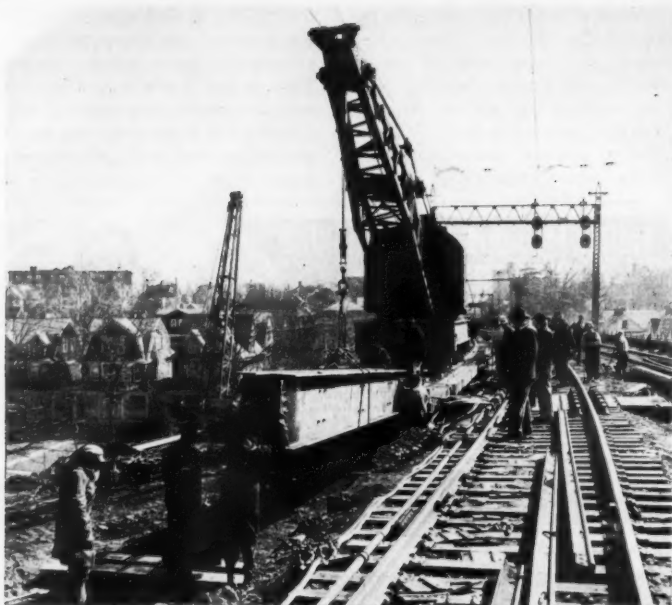
Take a minute to add in other Hydra-Matic advantages like better gas mileage—longer truck life. Then see your GMC dealer and find out how soon you can have these timesaving—and moneysaving—trucks working for you!

* Hydra-Matic standard on many models; optional at extra cost on some others.



Be careful—drive safely

GMC Truck & Coach—A General Motors Division



Double stringers are placed between pile caps during a week-end when traffic is light and the tracks can be out of service. Stringers for a full 150-foot section of track were placed during one weekend.

A Lackawanna train rolls over the temporary trestle as a Lima truck crane loads a dump truck with embankment material. As earth was removed, pile bents were stiffened with cross bracing made of 6-inch angles.

C&E Staff Photos

Trains Keep Rolling As Trestles B

Temporary pile-bent structure supports rail traffic as embankment section is removed for underpass project



It's the BALANCED Synclinal DESIGN



SUMP TYPE (cutaway)

Marvels are chosen because of their excellent performance in protecting machines and increasing production by reducing down-time. They are proving again and again, their superiority in the one real test—ON THE JOB! The BALANCED Synclinal Design provides that all-important balance between maximum ACTIVE filtering area and sufficient storage capacity for filtered out particles—therefore, longer periods of productive operation are attained at absolute minimum of maintenance. They meet J.I.C. Standards. OVER 475 ORIGINAL EQUIPMENT MANUFACTURERS have recognized the superiority of Marvel Synclinal Filters and now install them as standard equipment.

FOR DEFENDABLE PROTECTION ON ALL HYDRAULIC AND LOW PRESSURE CIRCULATING SYSTEMS—Specify Marvel Synclinal Filters on New Equipment—Standardize with Marvels on Existing Equipment.

EASY MAINTENANCE

Both sump and line type filters may be easily disassembled, cleaned and reassembled. Line type serviced without disturbing pipe connections.

WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications.

IMMEDIATE DELIVERY!

As in the past, Marvel continues to offer IMMEDIATE DELIVERY.

LINE TYPE (cutaway)

A SIZE FOR EVERY NEED

Available for sump or line installation in capacities from 5 to 100 G.P.M. Monel mesh sizes range from coarse 30 to fine 200.

FILTERS FOR NON-FLAMMABLE HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of non-flammable hydraulic fluids.

MARVEL ENGINEERING COMPANY, 625 W. Jackson Blvd., Chicago 6, Ill.

Gentlemen—Without obligation, please send me complete data on Marvel Synclinal Filters, as follows—
☐ Catalog #100—Oil Filters ☐ Catalog #300—Water Filters ☐ Data on Filters for Non-Flammable Fluids CE-9

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Company _____
Address _____
City _____ State _____



CONCRETE IS REMOVED to depth of 1½" by Tennant 25 hp chipping machine.

NEW chipping machine does 12-day concrete removal job in 5 days

Use of a new high-speed concrete router cut 7 days off surface removal time on this Wisconsin bridge-retopping job.

In 40 hours, Tennant machine chipped 1½" of 4000-lb.-test concrete from 94' x 20½' area. Eau Claire contractor L. G. Arnold completed job 58% faster than could have been done with air hammers.

Machine's 1600 rpm cutter head chips 4"-wide strip; cuts through aggregate stones but leaves them tightly embedded; provides even over-all cut; leaves good bonding surface for new topping. Interchangeable cutter heads adapt machine to cleaning pavement joints, routing out cracks for resealing, leveling humps, many other jobs. Has 25 hp engine, optional 14" diamond blade concrete saw, water tank.

Write today for details.

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2534 No. 2nd St. • Minneapolis 11, Minn.



**CONCRETE-ROUTING
MACHINES**

INDUSTRIAL MAINTENANCE EQUIPMENT

CONTRACTORS AND ENGINEERS

Three months after the start of the project, the trestle is completed and embankment material is removed from between the bents. This will make room for the concrete piers that will support the rail line across the Garden State Parkway underpass.

estles Built



IT TAKES PLENTY of construction know-how to keep an active three-track railroad in operation while a section of its supporting embankment is gradually replaced by a steel and concrete underpass.

Brann & Stuart Co., Philadelphia, Pa., did this bridging job where the Garden State Parkway meets the Delaware, Lackawanna, & Western Railroad in East Orange, N. J. The six-lane superhighway and a two-lane service road, now under construction, pass under the railroad. On one side of the tracks is an existing bridge and on the other, the East Orange station. Because of these structures, the tracks could not be relocated during the underpass work.

Brann & Stuart's plan was to drive steel piles through the embankment to support a 150-foot-long temporary trestle. This work was done only during periods of light rail traffic. As soon as the trestle was completed, sufficient embankment material was removed from between the bents to permit the placing of concrete for piers and abutments.

When the substructure was completed, the American Bridge Division, U. S. Steel Corp., began erecting the steel girders on rolling bents. The deck, ballast, and tracks were placed between the girders, and the completed superstructure rolled into place.

The New Jersey Highway Author-

ity awarded the \$1,300,000 contract late last year and work began in the middle of December. Within three months, Brann & Stuart had completed the 150-foot-long trestle and were ready to begin on the permanent piers.

At the start, the contractor secured permission from the DL & W to work one track at a time on weekends and during the week between rush hours. The plan was to use the weekends exclusively for the complicated job of pile-driving and the off-hours during the week for pile capping.

Two 60-ton Industrial Brownhoist locomotive cranes were brought in to drive 12-inch 53-pound H-piles

through the high embankment to rock. The catenary wires overhead were temporarily removed along the out-of-service track to reduce the hazard of electrical shock.

The 55-foot-long piles were driven in double bents consisting of eight piles in two rows of four each. The two center piles in each row were driven 3 feet 4 inches apart, and the outside piles were driven 2 feet 10 inches from the inner piles. The seven bents per track were placed in the future roadway areas to permit excavation of the piers. Spacings were either 25 or 33 feet.

Excavation for the piers and abutments was done without heavy wall supports, except at the east abut-

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FIGURE

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pletely removed and cannot
be lost.

It adds up to

**A BETTER BLOCK
FOR EVERY PURPOSE**



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McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

ment. Here, the closeness of an existing bridge made it necessary to drive lines of L. B. Foster ZP/32 sheet piles about 33 feet apart and just inside two double bents. Later, as the material between these two lines of piles was excavated for the east abutment, three levels of heavy 14-inch steel cross braces and wales were installed.

Piles were driven by McKiernan-Terry 10B3 and 11B3 hammers supplied with air from a battery of Worthington portable compressors. The complete air plant consisted of one 600, one 500, and four 315-cfm compressors.

Pile Capping

During the week, the contractor was allowed to cap the H-piles on one track at a time between 9 a. m. and 4 p. m. However, he was pro-

hibited from working on more than three bents at a time.

Pile capping was started by excavating a 5-foot-deep hole under the track and around the bent. Three-inch wood sheeting was installed and braced with 6 x 6's. Regardless of the progress during the first day, the section of track above the hole had to be blocked up by 4 o'clock to permit its use during the rush hours.

On the second day, the piles were usually ready to be cut off to grade and capped. Seat angles made of pile cutoffs were first welded to the top of each pile. Then 12-inch 74-pound H-sections were bolted and welded to the seat angles to form the pile cap. Four 1½-inch bolts were used at each pile. Power for welding and cutting was supplied by four General Electric units.

Capping usually required two

days. And, as previously stated, the track had to be blocked up each day by 4 p. m. to permit full service.

On the fourth day, the hole was backfilled to support the track until all the pile capping was completed. The contractor scheduled his operations so that excavated material from one hole was used to backfill another. Pile driving and capping was completed in 9 weeks.

Stringers

While the pile bents were being driven and capped, Brann & Stuart was fabricating the steel stringers which would support the railroad ties. Bents were spanned by two pairs of 33-inch 130-pound steel stringers set 5 feet apart. Three 12 x 18-inch oak blocks bolted between the stringers tied them together.

Stringers for one full section of track were placed over one weekend. In three weekends the job was completed.

Generally, a railroad gang began removing the track on Friday night after the rush hours. Dozers and front-end loaders moved in right behind to excavate the embankment material about a foot below the top of the pile caps. By Saturday morning, the 150-foot stretch was ready for the stringers. A Lima truck crane, working at the base of the embankment, hoisted the prefabricated pairs of stringers to the top, where one of the locomotive cranes placed them on the caps. As each span was completed, the notched railroad ties were quickly laid on top, the rails set in place, and the locomotive crane moved up to set the next span. Stringer pairs were tied together at top and bottom with 4-inch angles welded to the flanges.

The two outside tracks were set on stringers during the first two weekends, and the middle track was completed the third weekend. Removing the embankment material at the middle track was naturally more difficult than on the two outside tracks. The contractor assigned a Caterpillar HT4 1-yard front-end loader and an Allis-Chalmers 4-yard front-end loader to tunnel beneath the south track and pick up the material pushed through by an International TD14 dozer working on top between the two outside tracks. The plan worked well, and the stringers were in place by the end of the weekend.

Excavation

At this point, the 150-foot stretch of 3-track railroad was completely supported on the pile-bent trestle. Embankment material could now be removed from between the bents to open up areas where the pier and abutment footings would be placed.

A minimum of material was removed, so that as much support as possible was provided for the pile bents. Once again the front-end loaders proved their worth by their ability to move earth in the restricted quarters. The units dug out the material under the tracks and pushed it to the sides where Lima and Link-Belt truck cranes with clamshell buckets loaded rented trucks. As the material was moved out, the contractor stiffened the pile bents with cross bracing made of 6-inch angles. Adjacent bents were tied together with double 4-inch angles between caps and 6-inch angles between the lower sections of the piles.

Pier and abutment excavation was carried down to depths where timber sheeting could be installed to support the earth walls during the concrete pours. Conventional form



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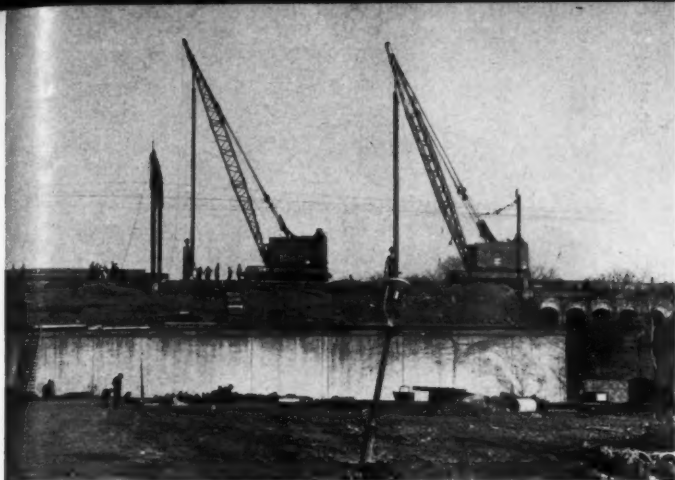
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Two Industrial Brownhoist locomotive cranes drive H-piles to rock alongside one of the tracks as crews start work on replacing a section of embankment with a temporary trestle.

C&E Staff Photo

work was used on most of the 4,500 cubic yards of ready-mix concrete on the job.

Before the rolling began, steel catenary bridges were erected on the east and west abutment to replace the temporarily supported catenary bridge near the middle of the trestle.

Rolling-In Operation

With the piers and abutments completed, the American Bridge Division erected steel plate girders on rolling bents. On weekends, the temporary trestle sections were dismantled and finished superstructure sections rolled into place.

After all the superstructure sections were in place, the remaining embankment under the bridge was removed and the H-pile bents burned off at subgrade. A total of 26,000 cubic yards of excavation was required on the job.

Porous fill was placed behind the west abutment, and the remaining section of temporary trestle was removed.

Personnel

V. Swanson is construction manager for Brann & Stuart Co. R. Dillenbeck is section engineer for Madigan-Hyland, consulting engineer. C. E. Vanderhoof is construction engineer, and H. W. Griffin is chief engineer, for the New Jersey Highway Authority. Ransford J. Abbott, former chairman, is executive director of the authority. Bayard L. England, vice chairman, is acting chairman of the authority. THE END

Preventive maintenance is more essential than ever. The careful selection and use of good lubricants at regular intervals will help your equipment operate efficiently.

Pellets in Asphalt Make Rubber-Road Mix

■ Synthetic rubber pellets, used to produce rubber-road mix in an asphalt plant at the job site, are offered by the Naugatuck Chemical Division, United States Rubber Co., 1230 Avenue of Americas, Rockefeller Center, New York 20, N. Y. The new Surfa-Seal pellets break down quickly to spread rubber evenly through the mix.

Previously, Naugatuck Chemical mixed asphalt and rubber at the chemical plant and shipped the hot mixture in insulated tank cars or trucks to the construction site. This system meant added transportation costs, as well as a limited shipping range. Use of the new pellets will cut shipping costs and eliminate the shipping restriction. Their cost is re-

ported to be about one third that of the premixed material.

From 6 to 12 pounds of the new pellets are added to a ton of asphalt, which covers 13 square yards of road with a 1½-inch-thick layer. This amount of the added material gives a three to six per cent rubber content.

For further information write to the company, or use the Request Card at page 18. Circle No. 267.

Motorola Regional Mgr.

Donald F. Brickley has been made manager of Region 1 for Motorola Communications & Electronics Division, Motorola, Inc., Chicago, Ill., manufacturer of fixed, mobile, and portable two-way radios. He will cover Idaho, Montana, eastern Nevada, Washington, Wyoming, and Utah.

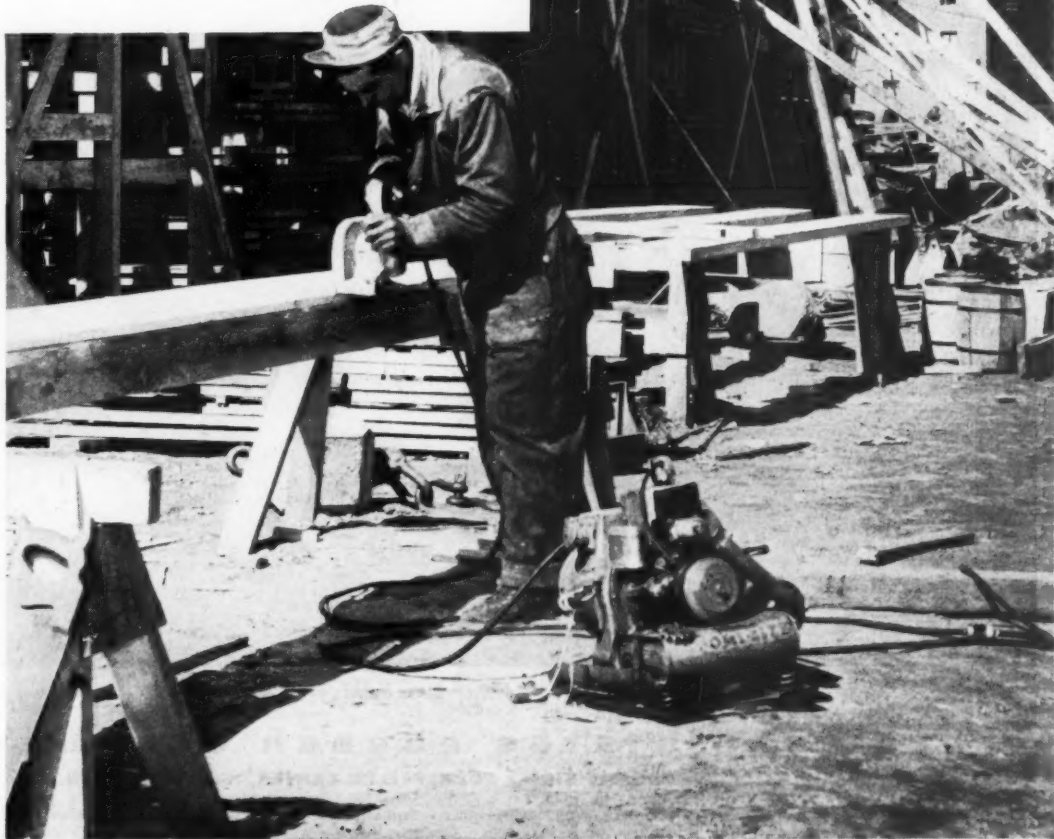


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Work speeds up . . . costs go down . . . always! Because a lightweight, carryable Homelite gives you instant, efficient power any place you need it . . . power for operating every type of electric tool or bright, flickerless floodlighting. Here, for example, a Homelite gasoline engine driven Dual Purpose generator, operates a standard universal power saw and a one man high cycle concrete vibrator both at the same time. Write for complete bulletin showing many ways to cut time and costs with Homelite Carryable Generators.

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The Indispensable DISPENSER

New Dispenser for Air Entraining Agents and Calcium Chloride

Write for New Folder

J-W MATERIALS, INC.
P. O. Box 288, Napoleon, Ohio

Permanent Markers for Boundary Line Surveys

■ New markers which will locate survey points permanently are offered by the Copperweld Steel Co., 322 Frick Bldg., Pittsburgh 19, Pa. The markers consist of a steel core to which a copper covering is molten-welded.

Two types are offered. A marker with a brightly-tinned end for high visibility is made in 1/2 or 3/8-inch diameters and is used where ground is uneven or where there is heavy foliage. A second type, furnished in a 5/8-inch-diameter size, has a compression-fit 1 1/2-inch-diameter bronze head, which provides space for center-punching the precise point of reference. It can be driven flush with pavements, roadbeds, bridge buttresses, or other surfaces.

Standard lengths are 3 feet.

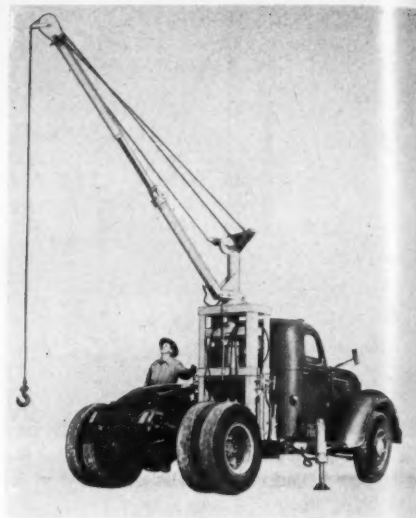
Should these survey markers be buried a few inches under the surface, they can be located easily by a dip needle.

For further information write to the company, or use the Request Card at page 18. Circle No. 311.

Athey Film Released

Applications, construction and design features of the new rear-dump PR21 trailer are described in a color film prepared by Athey Products Corp. The film is accompanied by narration describing each feature. Distributed by Athey-Caterpillar dealers, who are arranging showings, the film may be obtained by writing Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill., or by contacting any Athey-Caterpillar dealer.

The Model EB-50 hydraulic crane made by Truck-Crane, Inc., lifts up to 5,000 pounds.



It's tire-tough, because it's built the way a tire is—with an exclusive hose construction no other maker matches.

Proved in mines and quarries everywhere, U.S. Royal Cord Hose offers extremely high hydrostatic value, with a minimum of contraction and elongation. And with its great flexibility, shear resistance and toughness, it can be run over repeatedly by heavy equipment without harm.

Recommended particularly for applications where shock and excessive pressures are met, U.S. Royal Cord is available in continuous lengths from your "U.S." Distributor, any of our 27 District Sales Offices, or by writing to the address below. Whatever your hose requirement, you'll find it pays to turn to "U.S." There's a job-engineered U.S. Hose for practically every purpose—an expert staff of "U.S." engineers to assist you in your hose selection.

- * tube of high quality neoprene for maximum oil resistance.
- * braided cotton breaker ply anchors tube to carcass lastingly.
- * Exclusive. Two counter-spiralled plies of tough special cord floated in resilient rubber for outstanding strength, shear resistance and flexibility.
- * tough, brown natural rubber cover gives excellent cut and abrasion resistance—protects unique construction under extreme service conditions.

This hose took a tip from a tire!

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Truck-Loading Crane

■ A hydraulic material-handling crane for trucks was recently introduced by Truck-Crane, Inc., 130th and Halstead Sts., Chicago 27, Ill. The crane will lift up to 5,000 pounds, swing it onto the truck, lift it off, and spot it anywhere within a 16-foot, 280-degree radius.

The complete unit takes up only 18 inches of space behind the truck cab. For unloading, hydraulically controlled outriggers stabilize the truck. The controls for boom, winch, carriage, and outriggers are operated from panels on both sides of the truck. One hand lever reverses, locks, or operates the winch at the speed desired. A safety feature is that all power movements lock automatically when the levers are released.

Two models of the unit are the HB-50, with a horizontal boom, available in optional boom lengths up to 16 feet; and the EB-50, equipped with a telescoping elevating boom, with extensions up to 22 feet.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 240.

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CONTRACTORS AND ENGINEERS



New DC Power Plant Mounts on Truck Cab

■ A new power plant that mounts on the cab of a truck and operates radio equipment at a fraction of the cost of idling a truck for battery charging, is announced by Howard Industries, Inc., Racine, Wis. The Howard plant may be had in either 6 or 12-volt dc models which deliver approximately 500 watts.

Standard equipment for the State-line model includes: automatic voltage regulator, muffler, base, resilient mounts, automatic choke, radio shielding, remote-control starting, ammeter, oil-bath cleaner, a dust and moisture-proof high-tension flywheel magneto, and a fuel tank with filter.

For further information write to the company, or use the Request Card at page 18. Circle No. 303.

How Mechanized Carts Move Building Supplies

■ A booklet describing how its Prime-Mover mechanized carts are used to move a variety of building supplies on jobs is offered by The Prime-Mover Co., Muscatine, Iowa. The job studies presented illustrate cost-cutting ideas for contractors.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 293.

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Snow Plows

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- Fan Belt Driven Models Also Available



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MONARCH ROAD MACH. CO.

324 North Front Ave.
GRAND RAPIDS 4, MICHIGAN

SEPTEMBER, 1954

Better Traction for Wet Asphalt Highways

■ A hard abrasive material with which a highway surface is impregnated to increase its skid resistance is a new development of The Carborundum Co., Niagara Falls, N. Y. Tests reported by the company indicate that the stopping distance of cars traveling 30 mph on wet asphalt highways can be reduced one-third by the application of Highway Safety Grain. Experiments with the material are now being made on concrete highways as well.

The granular material is a fused alumina abrasive of over 2,000 hardness on the Knoop scale, compared with 850 hardness for quartz and flint, and 32 for limestone. It does not wear smooth and offers a favorable cleavage angle which provides

many small, rough, protruding points conducive to improved tire traction even on wet and slippery roads.

For further information write to the company, or use the Request Card at page 18. Circle No. 304.

Soil Testing Equipment

■ A new line of soil-testing equipment has been announced by the Tinius Olsen Testing Machine Co., 3032 Easton Road, Willow Grove, Pa. This line, designed by Karol & Warner, includes unconfined compression machines, triaxial testers, consolidation load frames, direct shear machines, consolidometers, compaction molds, and other related soil-testing equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 259.

C Tournapull moves 100 saturated yards hourly over 2000' of muddy grades

TIMKEN® bearings keep maintenance down

THE regrading of Minnesota State Highway 5 between Victoria and Chanhassen was seriously hampered by a long rainy spell. But mud or no mud, two LeTourneau-Westinghouse Tournapulls were able to load water-soaked clay, loam and sand, haul it over slippery, hilly roads, and complete a 2000' cycle every 5 minutes! The 44 Timken® tapered roller bearings in each Tournapull and attached P19 scraper helped make it possible.

For example, to keep these Tournapulls working in dirt, mud and water, sometimes up to the axles, bearing

seals had to be tight. By holding housings and shafts concentric, Timken bearings maintain effective closures—keep water, dirt and mud out, lubricant in.

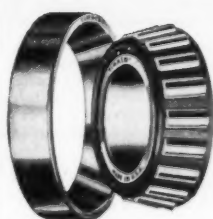
Carrying heavy loads up steep grades puts tremendous thrust loads on the pinion bearings. But Timken bearings handle these thrust loads with ease—as well as all radial loads. That's because the tapered construction of Timken bearings lets them take both radial and thrust loads in any combination. Shafts are held rigid, gears mesh accurately. Wear is reduced.

Gears last longer.

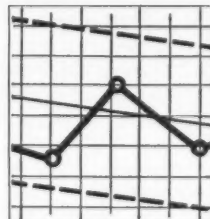
To get steel good enough for Timken bearings, we had to make our own. We're the only U. S. bearing maker that does. Timken bearings give longer life with less friction. Make sure the bearings on your machines are stamped with the trademark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



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TAPERED ROLLER BEARINGS



STATISTICAL QUALITY CONTROL

To insure uniform high quality and closer tolerances, the Timken Company uses statistical quality control. With it, tolerance deviations are plotted graphically. It's one of industry's newest, most scientific methods of improving product uniformity.

NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION





EXCAVATING EQUIPMENT

This is the fourth in a series of articles made up of excerpts from a new book, "How to Operate Excavation Equipment", by Herbert L. Nichols, Jr., published by North Castle Books, Dept. N, 212 Bedford Road, Greenwich, Conn. Priced at \$2.50 for cloth and \$3 for de luxe leatherette binding, the book may be obtained from the publisher or through the Book Order Department of CONTRACTORS AND ENGINEERS, 470 4th Ave., New York 16, N.Y.

Tractors and Dozers

TWO-WHEEL-DRIVE tractors are cheaper to buy and to operate than crawler tractors. The former also get around faster and do less damage to surfaces over which they move, but they do not have the lugging power of tracks or the ability to work on soft ground.

They are not suitable power units for excavating hard material unless it is blasted or scarified, and they are not recommended for work in loose or sandy soil. They are at their best in pits, yards, streets, and other places where they can work on paved or well compacted ground, or in scraper work and other jobs where speed is more important than traction.

Four-wheel-drive tractors have performance intermediate between two-wheel-drive and crawler machines.

Bulldozing

A bulldozer is worked by moving the tractor forward or, less commonly, backward, and raising and lowering the blade to contact material and cut, spread, or transport it.

As a dozer moves forward and digs, some of the soil cut by the blade will pile up in front of the blade and move with it, while some

will drift off the sides, forming ridges or windrows. Resistance to the machine's movement is made up of the power absorbed in cutting and breaking up soil and in friction in the loosened dirt. If the blade is lowered, more work will be done and resistance will increase, as a thick slice requires more digging power than a thin one, and the total amount of dirt resisting the blade is increased.

If the blade is raised, the slice will thin or disappear, and the amount of earth being pushed will decrease. Thus both work and resistance are reduced.

Plastic (rubbery silt or clay) soils will pull the blade down as it is pushed through them, dragging down the front of the tractor at the same time. An adjustable blade may be set for less penetration, and over-digging may sometimes be avoided by making a number of very thin slices. More often, digging is done in the regular way, and gouges made below grade are refilled with loose material.

Dozers which have the cutting edge set at a pronounced forward angle and set well below the blade for a maximum suck, those with the hoist on the central frame of the

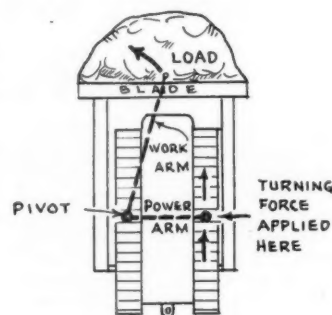
tractor, and those with spring cushions on the lift rods, are particularly cranky in such soil.

A cut which is to have steep-sloped sides, as for a highway, should be started full width, and necessary

softer soil. Uneven cutting may often be corrected by taking advantage of soil windrows, rocks, or other high spots to tilt the tractor up on the side where the blade cuts too deep. In narrow cuts, the tractor may be backed up on one side of the cut opposite the high or hard spots or may be turned so as to cut from the opposite direction. If no natural helps are available, the tractor may be walked onto boards or other lifts placed by hand at the low side.

A bulldozer has difficulty turning while pushing a heavy load. More power is needed to swing the load than to push it straight ahead. Turns are easier with a wide-gage machine, since the power arm is lengthened. They are harder with an angle-blade dozer or other unit with a blade carried a distance ahead of the tractor, as this lengthens the work arm and reduces the leverage.

Tracked vehicles pitch badly in walking over ridges, stones, or poles. After overbalancing, the machine generally falls with a crash which is very damaging to the tractor and dangerous to the operator. Crossing, if necessary, should be done slowly and at an angle, so that one side of the machine crosses the top and starts down while the other is still



TURN TO LEFT

measurements should be made to assure cutting the slope correctly, as it may be difficult or impossible to get the machinery up on it afterward.

A bulldozer not having a tilting control for the blade will cut deeper on the side which is downhill or in

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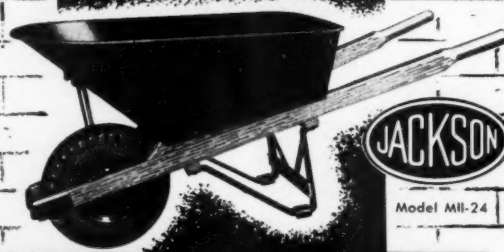
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climbing. This slows the fall and prevents the tractor from turning over backwards.

Many dozers have pumps or winches driven from a rear power takeoff, so that they do not operate when the flywheel clutch is released. This lowers the efficiency of the machine in hard or rocky digging, in uprooting stumps, in handling of bulky objects, and in many jobs where it may be desirable to stop the machine momentarily to raise or lower the blade.

Most bulldozer digging is done in shuttle fashion with the machine

turns may be better unless the machine has a fast reverse.

Working on frozen slopes is hazardous as the grousers may act like skates and allow the machine to slide uncontrollably downhill, regardless of the direction in which it is facing or trying to move. Sharp ice cleats will hold in such conditions, but dirt grinds their points off very rapidly.

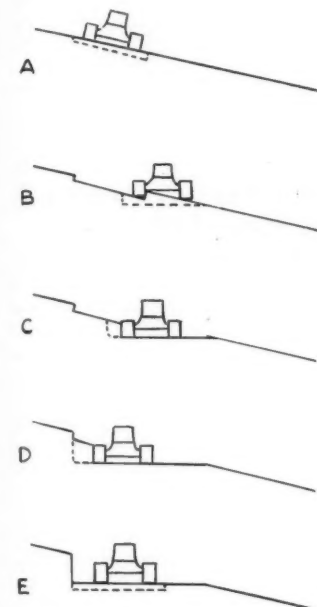
A similar danger is encountered on rock slopes, particularly shale with beds parallel to the surface. Slopes on soft fills are very treacherous, as the tip will be increased by the lower track sinking deeper than the upper one. If a machine starts to roll over slowly, it can sometimes be saved by turning downhill and lowering the blade.

A slope which is too steep to be safely worked sideward may sometimes be graded by running the dozer along it diagonally. If it is too steep for this, soil may be pushed straight down from the high spots, moved along the bottom, then pushed up to the low places in the slope.

Dozers can safely negotiate very steep up-and-down grades. Digging and pushing efficiency are much greater downhill and taper off to zero on steep upgrades. Steering is apt to be tricky on steep slopes, whether up or down, because of track slippage and shift in the center of gravity. Very steep grades of 25 degrees or more should be climbed forward rather than in reverse, because of better balance and traction.

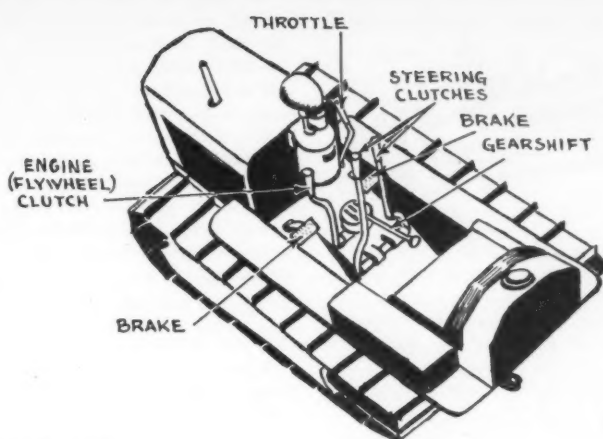
Cutting should be done downhill whenever possible, and in very hard ground it may be advisable to dig downhill, even if the spoil must be pushed up the same hill for disposal.

The engine oil-pressure gage should be watched closely on steep work as some engines do not get proper lubrication when tilted steeply, especially at compound angles, and a low oil level which still gives adequate lubrication on a level may leave the pump dry on either up or down grades.



Notching a slope from the side.

facing in one direction through the dig, push, spread, and return phases of the cycle. This is because the distances covered are usually quite short. Turns, particularly in soft dirt, take time and spoil the grade, so that it is quicker and easier to back to the cut than to make two turns in order to use a higher gear. On pushes of 100 feet or longer, the



Crawler tractor.

Hydraulic and Cable Control

Cable bulldozers have several advantages over the hydraulics. They have faster lift and drop and start moving with a jerk which is very effective at breaking out. The blade can be dropped far below the tracks and usually has a high lift as well, but it cannot be forced down into the digging by the weight of the tractor. The sharper digging angle often given to the edge and lower moldboard to compensate for this makes it difficult to dump loads on steep upgrades, as the dirt rests on the raised blade.

On the maintenance side, cables need periodic replacement. The cost of the cable is not large, but the nuisance of having it give out on the job and installing it during work time is a factor to consider. More lubrication points are present, and sheave bushings and clutch and brake linings need occasional replacement. The dozer is useless for lifting the machine out of mud.

Hydraulic systems have no fast wearing part to correspond to the cable, but packing glands need regular inspection, with adjustment and replacement; other leaks in the system must be watched for; breakage of flexible hose or pipes can put it

out of action; and pumps, rams, and valves need occasional replacement or repair. Oil must be added to the system rather frequently and changed occasionally. Operation is slowed by cold.

The decision about which type to use depends on the work and on the size of the machine. If the digging is such that a cable blade has difficulty cutting it and a hydraulic digs it easily, a hydraulic should be used. If it is so hard that the hydraulic has difficulty, it should be broken up with rippers, after which either type can handle it easily. Stumps in soft ground respond best to the yank of the cable, but in hard ground down pressure is needed to get a standard blade under them. Results in fine-grading depend more on the particular machine and the operator than on the type of control.

Cable blades give much better penetration in large sizes than in small. The smallest dozer blade is about five feet wide and weighs two or three hundred pounds, while the largest mounted on a crawler tractor is about 13 feet wide and weighs several tons. It will be seen that the weight on each foot of edge is much greater in large machines than in small, and it is this which largely



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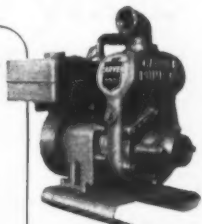
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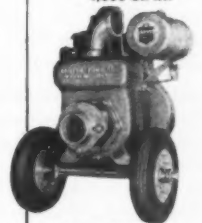


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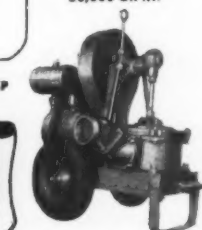
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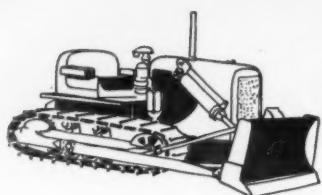
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determines whether a particular blade edge will penetrate. The largest machines have a penetration sufficient for most soils, and although hydraulic dozers of the same size can put several times as much weight on the knife, this extra weight is seldom needed.

Hydraulic blades are therefore usually preferred in medium and small dozers, and cable in large units. This is not a hard and fast rule, as even a large dozer pur-

chased for work in hard ground, in soft mud, or at miscellaneous work should be hydraulic, where a small one to be used only in pushing loose material might as well be cable.

For much the same reasons, towed accessories such as scrapers and rippers are liable to be hydraulic in small sizes, and cable in large. It follows that a cable unit for a large dozer and a hydraulic one for a small machine are more likely to be useful with accessories, and therefore more useful to the contractor than the opposite arrangement.

A curious feature of the controversy between cable and hydraulic enthusiasts is that some of the important differences are not the result so much of the type of control as of tradition. A cable blade can have down pressure—as evidenced by a special unit supplied by one dozer

manufacturer. Hydraulic blades can be made to operate faster than cable units by enlarging pump and lines or increasing the pressure, and can be dropped to any depth desired, at additional cost, by alteration of rams and levers.

(TO BE CONTINUED NEXT MONTH)

Waterproof Clothing

■ A line of waterproof garments is illustrated in literature from the Miller Products Co., Inc., 33A Warren St., New York 7, N. Y. The Miller Famous line of protective clothing has pressure-vulcanized seams to permanently prevent leakage.

Illustrations show coats, jackets, overalls, hats, footwear, and gloves.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 213.

Civil Engineering Head Is Appointed by N.Y.U.

Dr. James Michalos has been appointed by New York University to be chairman of the department of civil engineering of the College of Engineering.

An authority on structural analysis, mechanics, and design theory, and former chairman of the department of civil engineering at Iowa State College, Dr. Michalos succeeds Dr. Thomas C. Kavanagh, who has resigned.

Among the many associations of which he is a member are the American Society of Civil Engineers, American Concrete Institute, American Society for Engineering Education, and the International Association for Bridge and Structural Engineering.

Strip-Type Waterstop Is Made of Plastic

■ A polyvinyl plastic strip-type waterstop, designed for use between closely spaced horizontal slab and vertical wall concrete joints, and where reinforcing steel or other obstructions prevent the use of labyrinth-type stops, is announced by Water Seals, Inc., 9 S. Clinton St., Chicago 6, Ill.

One of the important features of the Water Seals strip-type waterstop is that it is rigid enough so that wet concrete will not knock it out of line. At the same time, it has enough flexibility to withstand half-inch joint separations.

The new waterstop is 6 inches wide, $\frac{3}{16}$ inch thick at the sides, and tapers to $\frac{1}{16}$ inch in the middle. This slightly concave shape plus a furrowed and ridged texture is said to provide positive locking of the stop to the concrete.

The new waterstop, made of vinyl plastic, is impervious to chemical deterioration and general aging. Another advantage is the ease with which one section may be spliced to another. The splice is easily made by heat-sealing with a hot knife. Special processes and equipment such as vulcanizers, metal welding, or brazing equipment are unnecessary.

The strip is available in lengths up to 100 feet, and longer lengths can be furnished on special order.

For further information write to the company, or use the Request Card at page 18. Circle No. 177.

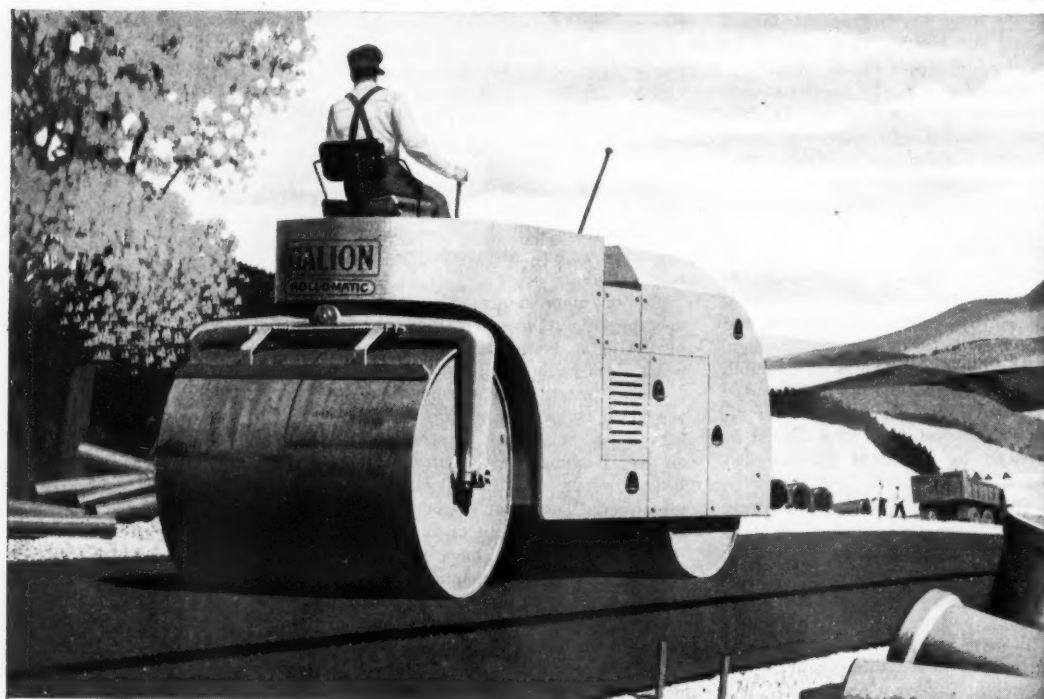
Bulletin on Coating For Asphalt Pavements

■ A solvent-resistant coating for asphalt pavements recently announced by the American Bitumuls & Asphalt Co., 200 Bush St., San Francisco 4, Calif., is described in a new bulletin from the company.

The bulletin graphically presents the uses for Colfix Jet Seal sealant and includes detailed performance data, specifications, and complete instructions for applying the material to existing or new pavements.

The coal-tar-based product was developed to protect airport refueling areas, parking ramps, and taxiways from the solvent effects of jet fuels and other petroleum products.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 289.



NEW GALION ROLL-O-MATIC WITH TORQMATIC CONVERTER

rolls 10% more surface per day

GALION—one of the world's largest manufacturers of road rollers—now offers four new gasoline-powered ROLL-O-MATIC tandem rollers equipped with Allison TORQMATIC Converters.

This efficient combination torque converter and fluid coupling makes ROLL-O-MATIC simpler to operate. It eliminates the master clutch. There are no gears to shift.

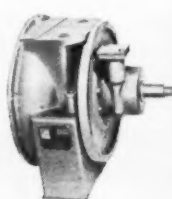
ROLL-O-MATIC rolls smoother in either direction. With the governor directly on the tailshaft it has quicker pickup—takes guesswork out of reversing. Rolling speed is automatically maintained up hill—on the level—down hill and on curves, by means of the combination of the TORQMATIC Converter and tailshaft governor.

The maker reports the operation is so smooth that at least 10% more surface can be rolled per day. And fuel consumption is reduced as much as 25%.

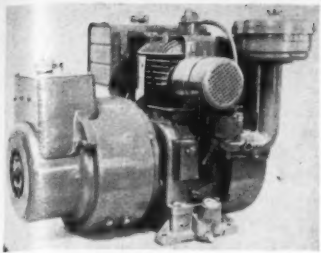
The applications of Allison TORQMATIC Converters are broadening rapidly. With units in a new range from 40 to 150 horsepower to fit both gasoline- or Diesel-powered engines, more than likely you, too, can gain the many moneysaving benefits of this drive. The completely self-contained converters are compact, easy to install and surprisingly low in price.

Check your equipment manufacturer or dealer or write us for full particulars.

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The lightweight Universal electric plant delivers up to 2,200 watts ac.

Compact Electric Plant Is Lightweight Unit

■ A new portable electric plant, delivering up to 2,200 watts ac, weighs 170 pounds, has a length of 21½ inches, and a width and height of 18 inches.

The Model 41-B, made by the Universal Motor Co., 527 Universal Drive, Oshkosh, Wis., is self-contained and has a 4-quart gasoline tank. The engine is a four-cycle, air-cooled model of 4.3 hp, operating at the speed of 3,600 rpm. The unit also features an improved ignition system.

The armature of the heavy-duty generator is mounted on the engine crankshaft, eliminating the possibility of misalignment damage due to twist and strain. A duplex receptacle is mounted on the generator for tapping required power.

For further information write to the company, or use the Request Card at page 18. Circle No. 261.

Joint Sealer Installed After Concrete Is Placed

■ A waterstop which is installed after the concrete is placed is shown in a booklet from Sika Chemical Corp., 35 Gregory Ave., Passaic, N.J. This nonmelting mastic material durably seals joints which are subject to severe movement and pressure. It can be used effectively between a variety of rigid structural materials such as concrete, concrete and steel, and even concrete and glass.

Gas joint sealer is said by the company to be nonsagging to 180 degrees F, nonbrittle below minus 10 degrees F, and resistant to water, weather, and chemicals. It resists temperatures as high as 500 degrees F without becoming fluid, polymerizing, or otherwise breaking down.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 226.

Replacement Parts Catalog For Dragline Buckets

■ Replacement parts for any make or model of dragline bucket are described in a new catalog released by the Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Ore. Typical examples of information this booklet contains are: how to determine proper drag chain length; drag and hoist chain specifications; maintenance tips; and alloy recommendations. Also included is data on several new products such as the Esco Spring Lock hinge repair links for drag chains.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 188.

Highways, Marsh Deposits Treated in HRB Bulletins

Bulletins on highway financing, concrete resurfacing, and the treatment of marsh deposits have been published by the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

The booklet, "Highway Finance", is an up-to-date reference list of information published on highway taxation and finance since 1950. The bibliography was prepared under the auspices of the board's committee on taxation and finance, and it contains 484 references, classified under seven major topics. Each reference has an annotation on the nature of the article or report. The booklet can be obtained from the Highway Research Board for 75 cents.

Priced at 60 cents is the board's "Concrete Resurfacing of Concrete Pavements in Various Stages of Deterioration." This describes the construction and performance of two experimental sections built in Missouri in 1932 and 1936, respectively. The publication covers such topics as transverse cracking, defects in the old pavement and in the resurfacing, the effect of the thickness of the concrete resurface, and effects of marker-seal center joint, and the general subject of expansion joints.

"Survey and Treatment of Marsh Deposits", priced at \$1.20, contains sections on peat classification; blasting of soft soils, excavating soft soil and refilling, direct filling, piling, and consolidation of soil by vertical and other types of sand drains.

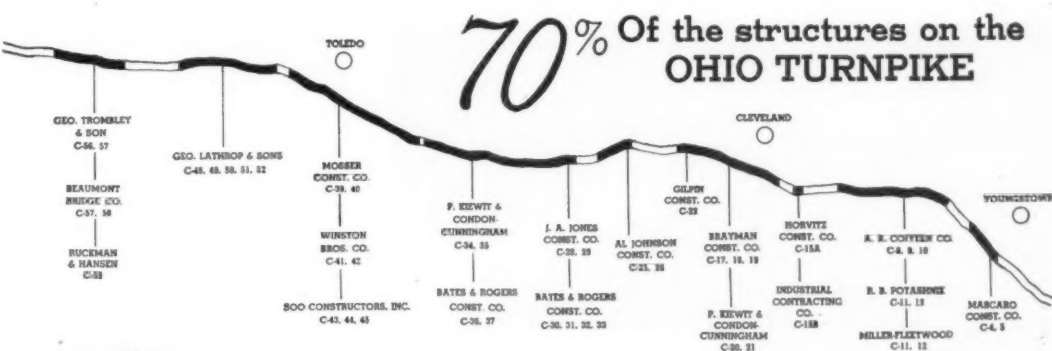
Data on Detonating Fuse

■ A detonating fuse is described in detail in a booklet from The Ensign-Bickford Co., Simsbury, Conn. The Primacord-Bickford detonating fuse consists of an explosive core contained within a waterproof covering.

Four versions illustrated include a plain type for shallow holes and for the trunk line, a reinforced fuse for deep holes where extra tensile strength is desirable, one that is wire-countered for ragged deep holes, and a plastic-reinforced type for extremely deep holes.

The booklet includes general instructions for loading and connecting the detonating fuse, and is illustrated with diagrams.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 211.



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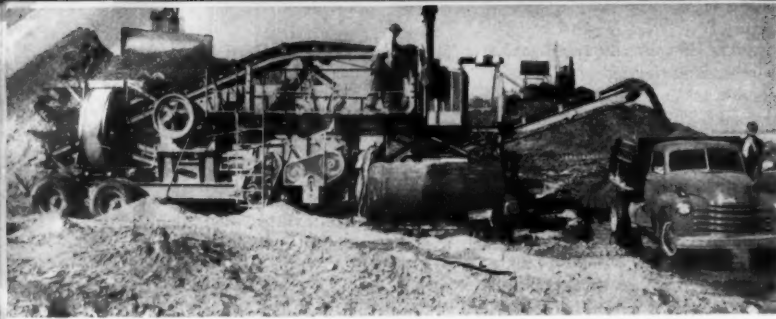
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An Allis-Chalmers HD-15 tractor and dozer moves gravel to a trap which feeds the belt conveyor of the Cedarapids Junior Tandem plant. C&E Staff Photos

GRADING MORE THAN 9 miles of road and placing more than 21,000 cubic yards of stabilized gravel surfacing, John Dieseth Co., Fergus Falls, Minn., increased the number of high-type roadways North Dakota is building on the black gumbo soil of the Red River Valley plain. While

it does not lend itself to good road building, this soil each year is being made to carry more and more miles of modern roads under the North Dakota State Highway Department's improvement program.

For some parts of Dieseth's job—a stretch on State Route 46 in Cass

and Richland counties in the south-east corner of the state—it was necessary to haul gravel for surfacing more than 20 miles from the pit.

The new 36-foot top of the roadway section, raised well above the surrounding fields, is flanked by wide and flat ditches which will hinder the accumulation of snow on the road. All slopes are 4 to 1, and ditch bottoms are a minimum of 12 feet wide. Right-of-ways of 200 to 220 feet provide ample space for the section. The stabilized gravel surface, after compaction, is 34 feet wide and about 4 inches deep. Under a future program, a portion of this width will be blacktopped.

The amount of rainfall, important in any grading job, played an even more important part in this project. The heavy soil in this area becomes a sticky plastic mass when it is wet, and it dries to a brick-like hardness. Good weather made it relatively simple to carry traffic through the project during construction.

Grading

A large part of the 316,000 cubic yards of grading was done by four Caterpillar D8 tractors pulling three LeTourneau scrapers and a Cat 80 scraper. Three more Cat D8 tractors and dozers, together with a D6, helped the scrapers to load and spread the material on the dumps. These units made hauls up to half a mile. Two Wooldridge Terra-Cobras and a Caterpillar DW21 scraper were on the job for about

two weeks, but the long haul work was completed before they arrived.

Scrapers spread the fill in shallow layers. These were thoroughly pulverized and compacted by two LeTourneau sheepsfoot rollers pulled by Minneapolis-Moline Model U tractors. Caterpillar No. 12 motor graders finished the grade, making it ready for the gravel surfacing.

Since gravel deposits are extremely scarce in this region, gravel surfacing material from a pit about seven miles east of Wolverton, Minn., had to be hauled nearly 14 miles to the near end of the job. Raymond Werner, Wheaton, Minn., produced the gravel and delivered it to the site.

At the pit, Werner used a 1-yard crescent scraper on a slackline to recover the gravel from below water level. An old Oliver crawler tractor served as movable deadman on the far side of the pit. A double-drum winch driven by a Waukesha gasoline engine propelled the scraper. An Allis-Chalmers HD-15 tractor and dozer carried the gravel from the scraper to a trap which fed a belt conveyor leading to the crushing plant.

A Cedarapids Junior Tandem crushing and screening plant reduced the gravel to a maximum size of 1 inch at the rate of 100 cubic yards per hour. The plant, equipped with a 10 x 36 jaw crusher and 24 x 16 rolls, was powered by a General Motors 6-cylinder diesel engine. A fleet of rented trucks hauled the

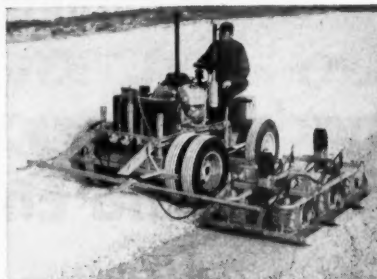


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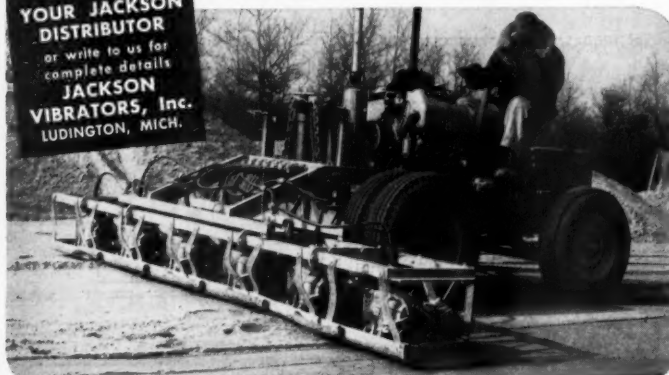
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IN ANY GRANULAR MATERIAL used in flexible base-course widening. For this purpose compacting units are assembled in tandem, (3 deep, single or double row) and towed at side of tractor. Compactor bases of 12" and up may be substituted for standard 26" bases to suit requirements.



SAND FILLS, SUCH AS BRIDGE APPROACHES . . . another spot in which this machine shines. It's rapid and gets into places inaccessible to larger equipment. For the really tight spots one or more of the compacting units may be fitted with operating handles and used as self-propelling, manually guided compactors.

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Clay binder is loaded from a windrow beside the roadway into a Ford F-6 dump truck by a Caterpillar D4 tractor with Traxcavator loader.

The clay-stabilized gravel surfacing is further pulverized and mixed by a Seaman Pulvi-Mixer towed by a Minneapolis-Moline tractor.



material to the job.

As dumped on the roadbed, the gravel was clean and wet. Trucks dumped in a pile along one side of the roadway, and motor graders bladed the wet gravel into a windrow on the opposite side. This procedure distributed the excess water over the width of the roadway, preventing the base from being soaked excessively on one side.

Clay soil for stabilizing the gravel was secured from shallow pits of select material adjacent to the project. After removing the topsoil and vegetation, the clay was windrowed by a Caterpillar No. 12 motor grader which took very thin cuts. Slicing the relatively dry soil into thin layers resulted in reasonably good pulverization which was further improved as the material was rolled into windrows.

A Caterpillar D4 tractor with Traxcavator loader picked up the material from the windrow and loaded it into Ford F-6 dump trucks. The trucks spread the clay on the gravel at a rate of 500 cubic yards per mile. Motor graders started the blending operation by rolling the clay and gravel into a windrow and then flattening it out. A Seaman Pulvi-Mixer, powered by a GM diesel engine and towed by a Minneapolis-Moline tractor, mixed and further pulverized the materials.

When additional water was needed, it was hauled from the Red River in two 2,500-gallon tanks on 6 x 6 International trucks. A 3-inch

Rex pump brought water from the river to the trucks. When the binder soil was thoroughly pulverized and mixed with the gravel, the surface was brought to finished grade by the motor graders and compacted with rubber-tired equipment.

The stabilized mixture, consisting of 2,400 cubic yards of gravel and 500 cubic yards of binder soil per mile, resulted in a compacted surface about 4 inches thick.

Outside the gravel surfacing, the entire right-of-way was seeded to grass. Around culvert ends and other structures, sod was placed to prevent erosion. The finished roadway has a pleasing appearance, it will retain a minimum of snow, and its flat slopes and wide ditches provide maximum safety for vehicles which may be forced off the road.

Bridges Raised

Two treated-timber bridges on this stretch, remodeled under separate contract, were widened 6 feet and raised up to the level of the new road. New creosoted piling was driven alongside the old bents to provide for a widening of 3 feet on each side. Jacks then raised the entire deck to the new grade and moved it 3 feet to one side.

New stub bents were built on the old bents to bring the entire substructure up to the new elevation, and 6 feet of new deck was added on one side. Guardrails and railings were removed from only one side of the old deck, and these were replaced

on the widened section. Practically every timber of the old bridge was re-used so that only a minimum of new material was required.

Personnel

Clarence Lee supervised the project for John Dieseth Co. Lyle Mc-

Cormick was resident engineer for the North Dakota State Highway Department. D. E. Smith is division engineer of the Valley City division. F. H. Brasie is construction engineer, and S. W. Thompson is commissioner of the North Dakota department.

THE END

McConnaughay
HTD-JR ASPHALT MIXER

NEW!

HTD-LP... up to 10 tons hot mix,
30 tons cold mix
per hour.

HTD-500... up to 7 tons hot mix,
15 tons cold mix
per hour

HTD-B... up to 5 tons hot mix,
10 tons cold mix
per hour.

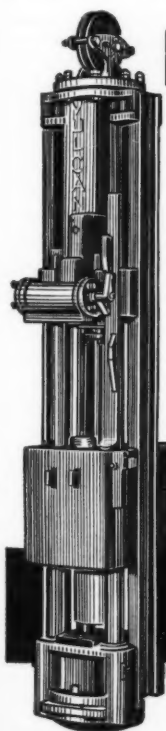
**UP TO 60 TONS COLD MIX
or 20 TONS HOT MIX PER HOUR
for resurfacing and patching**

Especially recommended for continuous operation in the production of cold bituminous mixtures, the new McConnaughay HTD-JR will handle up to 60 tons per hour on location... assuring exceptionally fast, low-cost resurfacing.

With a 24-inch metal conveyor for proportioning the aggregate and a 55-gallon-per-minute positive displacement pump for proportioning the bituminous material, this McConnaughay HTD-JR can produce one ton per minute on the job! Thanks to a trailer-type hitch with a lever-operated mechanical jack leveling device, the unit may be coupled to aggregate trucks for mixing and depositing on the move.

In addition, the new McConnaughay HTD-JR is designed and equipped to produce up to 20 tons of hot mix per hour for pavement resurfacing and patching. The value of such versatility is evident: your assurance of fast, economical asphalt mixtures for practically any job, on any location, at any time of the year. Write, wire or phone for details and specifications today.

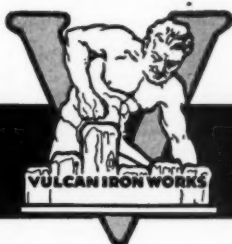
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LAFAYETTE, INDIANA



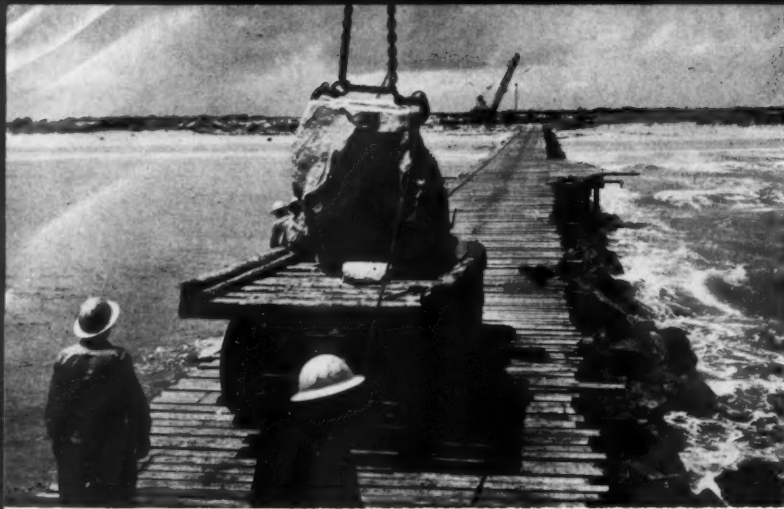
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The Warrington-Vulcan packs all the power you'll ever need at any pile driving job. Operates at medium steam pressure, delivering a moderate frequency of low velocity blows from relatively heavy ram.

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An 8-ton granite rock quarried in Georgia and shipped to the site by rail is hauled on a flat-bed truck to the end of the timber trestle, where a crane picks up the boulder and places it in the jetty line.

C&E Staff Photo

Crane Places Boulders For Long Ocean Jetty

BUILDING A ROCK jetty out into the ocean requires much more than just piling up a line of heavy stones. The U. S. Army Corp of Engineers has a standard jetty specification that calls for accurate placing of several different sizes of selected stones keyed together to form a stable structure.

Just north of Cocoa Beach on the east coast of Florida, the Hardaway Contracting Co., Columbus, Ga., is finishing up construction of long

jetties on each side of the entrance to the Port Canaveral inlet. One 1,150-foot-long jetty is completed; another measuring about 600 feet in length is scheduled for completion this month.

Four years ago, the port was constructed by building a dike around a square-mile area of the mainland side of the barrier beach. The area was opened to the sea by dredging an inlet through the beach. Unusual current action, however, soon began to block sections of the inlet, and considerable maintenance dredging was required. To overcome the situation, the Corp of Engineers decided last year to construct rock jetties on each side of the inlet to deflect the harmful currents that travel parallel to the shore.

Hardaway's contract totaled \$545,000 and required more than 54,000 tons of granite stone. The job called for construction of a 300-foot-long rock revetment along the north beach, a 1,150-foot-long north jetty into the ocean, and a 300-foot-long extension to the existing south jetty. A subsequent revision in plans, however, called for the south jetty extension to run approximately 600 feet. It is this phase of the project that the contractor hopes to complete this month.

Design

Revetment design requires that stones ranging from 100 to 6,000 pounds be placed on a 2 to 1 slope over a 9-inch course of 6-inch-minus stones and a 6-inch bed of ½-inch or smaller stones. The jetty cross section is trapezoidal with sides sloping 1½ to 1 at the beach and gradually increasing to 2½ to 1. A 2½-foot-thick blanket of 12-inch-minus stones is topped by a core section with a constant top elevation of minus one. Core stone varies from 200 to 4,000 pounds. Around the core are placed cap stones ranging from 2 to 8 tons on the section nearest shore and gradually increasing to a minimum of 10 tons at the end of the jetty.

Stone Handling

All of the granite stones were quarried in Georgia and shipped by rail to Cocoa, Fla., where a Link-Belt crane loaded them into a fleet of rented trucks. Various sizes of stone were stockpiled at the site.

Hardaway's first job was to construct the 300-foot revetment just back of the shoreline. Plans called for the revetment to slope from elevation +10 to -6, well below the water table. A double ring of Moretrench wellpoints, therefore, was installed around the area to keep it dry until the stones were placed. About 600 points were jetted into the sand on 2½-foot centers and connected to an 8-inch header pipe. A sand dike blocked the surf from entering the area. The wellpoints worked very well, lowering the water table from mean high-

Lowest Priced 4-Wheel Drive In Its Field!



GEOPHYSICAL & FORESTRY WORK...
You can't beat this Chevrolet panel truck with NAPCO 4-wheel drive for getting work crews with tools and equipment to tough "off the road" job sites.



ROAD AND BUILDING CONSTRUCTION...
Whether it's a tough pull out of a gravel pit or at time-saving speed over the highway, your Chevrolet Truck equipped with NAPCO 4-wheel drive gets you PLUS A FULL LOAD through with ease.



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Here's the most versatile vehicle you've ever driven. Whether it's towing a big bus, "chasing parts", or plowing snow, your Chevrolet 4-wheel drive "pick-up" does the job best, and, at lowest cost!



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for ¾ and 1-Ton FOB Minneapolis
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NAPCO 4-WHEEL DRIVE for CHEVROLET TRUCKS

¾, 1, 1½ and 2 TON

Check These Exclusive Advantages:

● UTILIZES STANDARD REPLACEMENT PARTS

Parts and service for NAPCO Powr Pak are available at any Chevrolet dealer from coast to coast. All replacement parts for the entire differential of the front axle assembly are available at any Chevrolet Dealer.

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Repeat orders from the nation's largest utility companies and fleet owners are proof that NAPCO 4-Wheel drive is doing an outstanding job.

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NAPCO 4-wheel drive is installed without cutting, welding or altering cab or frame. It is bolted to the frame and can be removed at will. It is simple to transfer it from a worn truck to a new one.

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The normal easy turning and handling characteristics of Chevrolet trucks are not affected by the NAPCO Powr Pak installation. At cruising speeds over highways there's no trace of whip or weave... no fighting the wheel. And, when the going gets tough "off the road", just a flip of a lever gives you finger tip control of tremendous extra traction power... no stopping or declutching necessary to shift.

Now, for hundreds of dollars less than any other 4-wheel drive in its field, you can buy the famous NAPCO Powr Pak for Chevrolet ¾, 1-ton, 1½ and 2-ton trucks.

A 4-WHEEL DRIVE "PICK UP"

Now, for the first time you can have a Chevrolet "pick-up" with 4-wheel drive for the extra traction power to "go anywhere". Chevrolet trucks equipped with NAPCO Powr Pak get you in and out of jobs no matter how tough the going is. And, you get more than just transportation... you get a truck that takes you PLUS a full load through the toughest off-the-road terrain with ease. Then when you get out onto the highway, you have ease of handling at cruising speeds. No costly "down time" when operating Chevrolet trucks equipped with NAPCO 4-WHEEL DRIVE!

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You owe it to yourself to see how much a Chevrolet truck with NAPCO 4-Wheel drive can do for you. We'll be happy to arrange a demonstration. Just send this coupon and DO IT RIGHT NOW WHILE YOU'RE THINKING ABOUT IT!

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More than 54,000 tons of carefully selected granite rock is used to construct 2,050 feet of protective sea barrier

tide level of about elevation +1.75 to -6.

When the revetment was completed, the contractor began on the jetty, which connected to the revetment at a point 50 feet below the north end. A Caterpillar D7 dozer pushed the beach sand to one side, excavating a trench into the surf.

Blanket

As soon as the trench was cut to grade, a Lima 750 crane began laying the 2½-foot-thick blanket of 12-inch-minus stone. The stones were picked up at the stockpile with a Link-Belt clamshell and loaded into dump trucks. At the jetty, the trucks dumped into a box-type steel scale pan that had one side open. Using three lines, the crane picked up the loaded bucket and then emptied it along the jetty line. The scale pan worked very well under water, where it was difficult to control the depth of the blanket. Its



A Lima crane working on a timber mat at the end of the trestle picks up one of the smaller cap stones.

size was such that loads dumped next to each other formed the required depth of blanket.

As the jetty moved out into the water, a temporary timber trestle was erected on top to provide a roadway for the crane and trucks. Pine posts were wedged and wired to the rock every 12 feet and capped with 12 x 12's. Double 8 x 12 stringers were nailed to the bents and covered with 3 x 6 decking. The crane worked on a timber mat.

Placing the large stones followed the same procedure throughout the length of the jetty. After 10 to 15 feet of blanket stone had been laid ahead, flat-bed trucks began hauling out the core and cap stones. Core stones were set with a clamshell, and cap stones with rock hooks and chains.

As the placing continued, engineers traveled back and forth between the stockpiles on shore and the end of the jetty selecting the best-shaped stones for each new position. When the stone was finally maneuvered into position, a

workman pulled out the hooks, and the operation was repeated.

Lifting holes were cut into the stones with Ingersoll-Rand drills supplied with air from a 105-cfm compressor.

D. R. Bird was superintendent for Hardaway Contracting Co. R. O. Anderson was inspector, and D. E. Eppert was area engineer for the Jacksonville District of the Corp of Engineers.

THE END

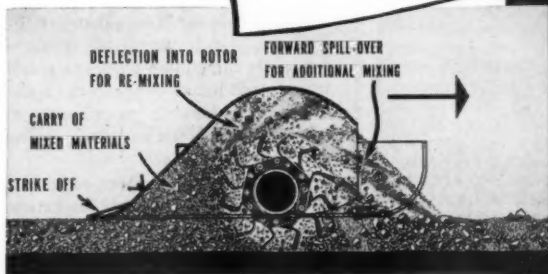


Once the exact position has been determined, a rock is placed by the crane. Here a boulder is fitted into a spot at the end of the jetty. When the engineers are satisfied that the rock fits, the hooks will be pulled out with the rope held by the workman at right.

for the highest daily output of completely mixed and blended materials

the

SEAMAN PULVI-MIXER



TIGHTER COMPACTION IN A PULVI-MIXER BASE

The PULVI-MIXER does more than mix. It corrects aggregate segregation (the unstable separation of coarse and fines). In mixing, it places and blends the materials so that the voids are filled with fines to mortar-in and securely key and interlock the coarse stone. Mix is left in a smooth, partially compacted condition, held to the specified grade and crown, ready to roll-out to a denser, higher load-bearing base.



Idaho soil-cement project. Good example of efficient train operation, employing SEAMAN TRAV-L-PLANT (distance) to apply and mix-in moisture increment and Seaman Self-Propelled MIXER (foreground) to further increase yardage of completed base.



SEAMAN TRAV-L-PLANT in sand-asphalt stabilization of Georgia highway. TRAV-L-PLANT applied 3.17 gallons per square yard in one pass mixing at 50 ft. per minute.

No matter what materials you are using in base or sub-base construction; no matter what binders (bituminous, soil-cement chlorides, sand-clay, etc.); no matter what sort of job — highways, runways, parking areas or farm-to-market roads — because of its higher daily production, the SEAMAN PULVI-MIXER operates at the lowest cost per square yard. And because it mixes *in-place*, you benefit by a minimum of materials handling.

Because the PULVI-MIXER is low in original investment and high in versatility (seed-bed preparation, land clearing, ice and snow removal as well as the highest types of stabilized bases) your purchase can be productive virtually every month of the year.

A "smooth operating" truck driver is easily trained for operating.

In grading, fills, or embankments, use a SEAMAN for pulverizing and blending for maximum density at a fraction of rolling and tamping cost and time.

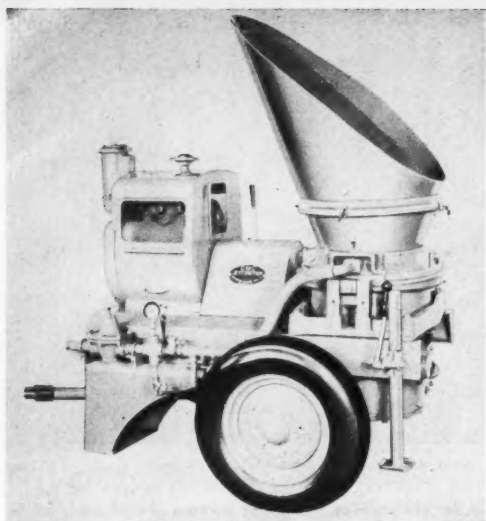


Seaman Self-Propelled TRAV-L-PLANT. Pump, tachometer assemblies, volumetric meter and spray bar are provided for highly accurate application of bituminous binders or water, 7 ft. mixing width. Gasoline or diesel powered. Engineered for every type of stabilization.

Newly revised Bulletin describing self-propelled TRAV-L-PLANT and Self-Propelled PULVI-MIXER. Also shows many field scenes. Send a postcard now. Ask for Bulletin TPS.

SEAMAN MOTORS Inc.

282 NORTH 25TH STREET
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The CMC Model 240 Jetcreter is now offered with a variety of power units.

Concrete Placing Gun

■ The Model 240 Jetcreter for pneumatic concrete placing is now built in air or water-cooled engine models, or with an explosion-proof electric motor, according to the Construction Machinery Sales Co., 447 Vinton St., Waterloo, Iowa.

The water-cooled model has electric starting, a 134-cubic-inch valve-in-head Ford radiator-cooled engine, and multispeed transmission. The air-cooled unit, powered by a Wisconsin engine, has manual starting and can be purchased with or without a multispeed transmission.

The equipment is designed for operation with an independent source of air. It features the company's "air lock" principle that makes possible continuous feeding. It can be modified at the factory to increase output 40 per cent, making possible a capacity of 35 to 40 bags of 4 to 1 mix per hour.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 242.



"Always tryin' to work in good with the higher-ups!"

BROS tip sheet

EQUIPMENT NEWS FROM A FAMOUS NAME IN ROAD MACHINERY

BROS PORTABLE STEAM GENERATORS HAVE CLEAN, SIMPLE "CENTRALIZED" CONTROLS

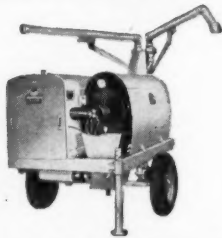


Portable Steam Generators by Bros feature a unique scotch marine two-pass gas travel design with numerous small tubes. This design makes heat release even and thorough, speeds up steaming time, and reduces expansion and contraction wear on the boiler unit itself. Available in skid-type or semi-trailer.

You don't need a skilled engineer or a man with four arms to run a Bros Portable Steamer! The clean, orderly working-end design of the Bros 30, 45, 60 and 100 hp models is a welcome relief from the "gingerbread" portable boilers of the past. Centralized controls are within easy arm's reach, and there is nothing "hanging out". You can close it, lock it up and leave it! Bros has been making boilers for 72 years, and you won't find a more effective portable boiler on the market!

TWO-WAY HEATING ACTION OF BROS CIRCULATOR MAKES BOTH HEATING AND PUMPING FASTER

For the heating and pumping of bitumens in places where steam is not needed, the Bros Asphalt Circulator and Heater works fast and at low cost. The exclusive "two-way" heating action applies heat fast to both inside and outside of material chamber. You can leave material in the chamber, re-heat it and inject it as a "hot slug" to break loose cold or stiff cars. Four distinct pumping speeds in conjunction with various burner adjustments provide the ultimate in heating control.



A low center of gravity and "balanced" design help to make this Bros Asphalt Heater and Circulator very stable. You can maneuver it around easily, and it "travels" excellently at road speeds. Available in skid-type or semi-trailer.

"Quickies" for your information

If you're specifying a distributor, remember the Bros "Bituminizer." It has a new working-end design that really simplifies operation.

New star of the Bros Portable Steam Generator family is the big 100 hp "super" steamer, a truly portable unit for pile driving jobs or asphalt plant operations.

To do three jobs with one rig, ask about the new Bros "Dual-Heat" which combines a portable steamer and a circulator. Steam heating, oil-fired circulating heating, and pumping!

Bros "Spraymatic" distributor spray bar has a new type of nozzle that cannot clog. Eliminates that undesirable "streaking".

Road Machinery Division, **WM. BROS BOILER & MFG. CO.**
1189 Tenth Avenue S. E. • Minneapolis 14, Minnesota

To get specifications and data on any of the Bros bituminous material handling products listed below, just check the items which interest you and send us this slip, along with your name, company or organization, and address.

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| <input type="checkbox"/> Bros Portable Steam Generators, 30, 45 or 60 generated hp | <input type="checkbox"/> Bros Asphalt Circulator and Heater | <input type="checkbox"/> Bros "Dual-Heat" combination unit including portable steam generator and asphalt circulator |
| <input type="checkbox"/> Bros Portable Steam Generator, 100 generated hp | <input type="checkbox"/> "Bituminizer" asphalt distributor | |
| | <input type="checkbox"/> "Spraymatic" non-clog distributor spray bar | |

Cavity-Wall Tie And Trough Accessory

■ Two new accessories for cavity-wall construction have been introduced by the Conner Steel & Wire Corp., 600 E. 132nd St., New York 54, N. Y.

The first is the Rock-Fast cavity-wall tie, which works on concrete forms. Its companion piece is a metal trough that hangs between the walls during bricklaying operations to catch extra mortar and prevent the formation of bridges.

The cavity-wall ties are manufactured in $\frac{3}{16}$ and $\frac{1}{4}$ -inch diameters. Each tie has a 3-inch wing at either end that lies in the horizontal mortar bed, and 6 or 8-inch stems that dip to form a 2-inch spacer which automatically helps align the walls at the proper distance. The troughs are made from heavy-gage steel and are available in 36-inch lengths.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 294.

Electric Impact Hammer

■ An electric impact hammer is illustrated in a booklet from Goode Durrant & Murray, Inc., 11 West 42nd St., New York 36, N. Y. The Kango electric hammer, a British import, is available in models for operation on 110/115 volts. It can be used on either ac single phase or dc.

The booklet includes details on tools available for the hammer.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 212.

McKissick Export Agent

D. T. O'Connor, 500 Fifth Ave., New York, N. Y., is now serving as export representative for blocks and tackle manufactured by McKissick Products Corp., Tulsa, Okla. He will handle export business, except that in Canada. Shipping and invoicing will be done from McKissick's Tulsa office.

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CLINTON CHAINSAW

No. CS525 **\$239.50**

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Your CLINTON DEALER will furnish the saw and the fuel to introduce you to the fastest one-man chainsaw ever built.

Has the big chainsaw features. A full weight tool—not a toy. Special diaphragm fuel pump! You cut from any position. New on-off switch for complete power control. Safety-sight guide! Belt drive! Split second swivel! A complete family of Clinton Chainsaws for you to choose from. Clinton Engine Replacement Plan lets you change power units for only \$70.00 plus your old engine. Service everywhere. Mail for giant 3-color folder. See your Clinton Dealer for free tryout.

New 6 hp. Model 1600

New 9 hp. Model 2500

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quick STARTING

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1 to 9 horsepower! 14 models to choose from including the new 19 pound, 4-cycle engine. Powerful! Low-Cost! Over 4000 Clinton Service Centers nationwide.

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Chainsaw Div., Dept. K-2, Clinton, Mich.
Engine Division, Maquoketa, Iowa
Over 2,500,000 Clinton Gasoline Engines Now In Use Throughout The World.



The new Rex plaster and mortar mixer.

Lightweight Unit Mixes Plaster and Mortar

■ A 2-cubic-foot plaster and mortar mixer has been put into production by the Construction Machinery Division of the Chain Belt Co., Dept PR, 4701 W. Greenfield Ave., Milwaukee 1, Wis. The new Rex mixer, which weighs 234 pounds, features carrying handles placed so that two men can carry the unit with ease. An optional wheel makes it possible for one man to move the mixer in wheelbarrow fashion.

A 1.87-hp Briggs & Stratton engine provides power for the machine.

For further information write to the company, or use the Request Card at page 18. Circle No. 318.

Portable Crushing Plant Of Single-Pass Design

■ A booklet describing the Cedarapids new single-pass portable crushing plant is announced by the Iowa Mfg. Co., 916 N. 16th St., Cedar Rapids, Iowa. The bulletin explains the principle of operation of the single-pass plant and tells of the features of this unit for producing aggregate for city streets, country-road maintenance, small state-contract work, base and blanket-course jobs, and for all work in which portability and fast set-up are important.

The hopper and feeder are mounted on the rear end of the plant, and the dolly on the front end. This permits the unit to be backed easily to the face of the gravel bank without jockeying for position.

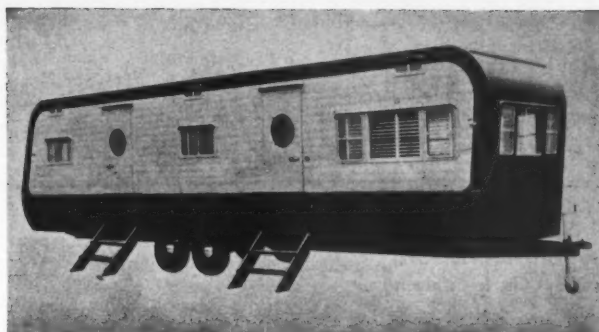
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 266.

Catalog on Complete Line Of Pumps for Contractors

■ A catalog of Marlow contractors' pumps is available. The literature covers the company's Mud Hog diaphragm pumps for heavy dirty work; high-pressure self-priming centrifugals for water supply; "diffuser-primed" high-capacity pumps for dewatering; auxiliary-primed straight centrifugals for jetting; and base-mounted steel-wheel-mounted and tire-mounted units.

Specification tables and cutaway and exploded views illustrate the various models in the line.

To obtain this literature write to Marlow Pumps, Box 556, Ridgewood, N. J., or use the Request Card at page 18. Circle No. 319.



A NEW CHASSIS that completely eliminates the wheel well boxes from the interior is among improvements in the International trailers designed and furnished for use as mobile field offices. The change allows more working floor space and greater flexibility in arranging the interior. Furniture in the 35-foot model shown includes a superintendent's desk and overhead cabinets at each end of the trailer, a draftsman's table, an enclosed closet, and a blueprint rack. An oil heater and a lavatory complete with a hot-water heater are also included. The trailers are available in 35, 30, 28, and 23-foot lengths. For further information write to International Trailer Co., Inc., 5712 Erdman Ave., Baltimore 5, Md., or use the Request Card at page 18. Circle No. 302.

No Loss
of valuable time!
No LAG
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when your men are
served plenty of cool
refreshing water in



- HELPS REDUCE ACCIDENTS due to heat fatigue.
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Dixie Safety Slogans will help your men become more safety conscious.

INSULATED DIXIE WATER CARRIER

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WARCO®
up to a
90°
angle
on either
side...



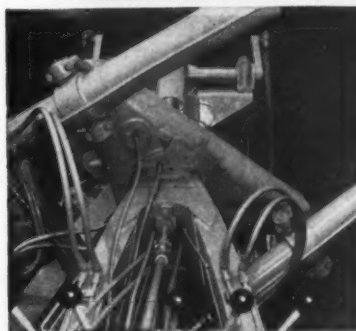
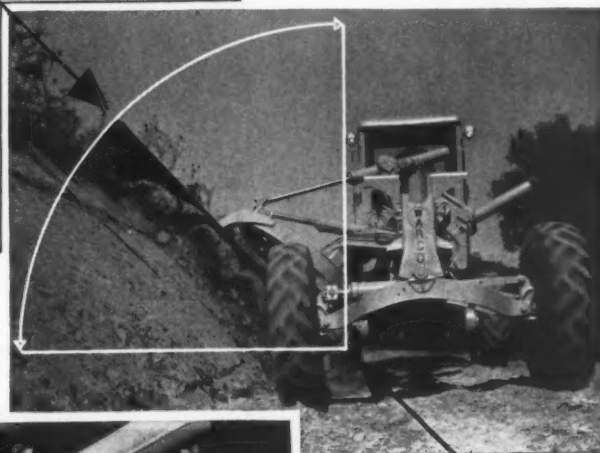
COMPLETE HYDRAULIC CONTROL of every working position

is yours... entirely governed from the cab... but it's yours only with a WARCO!

ONLY WITH A WARCO can the operator hydraulically attain a high bank-sloping angle up to 90° on either side... secure extreme side reach for level grading... arrive at any blade position required for ditching... all this without ever leaving the cab.

ONLY WITH A WARCO can the operator hydraulically maneuver the blade from 90° on one side to 90° on the other... or rotate the blade 180° for a back-up pass... without manual adjustment of linkages.

ONLY WITH A WARCO is such complete hydraulic blade control possible... time-saving flexibility that speeds work, cuts down-time, and lessens operator fatigue.



This unique WARCO rotating saddle makes it easy to secure even extreme blade positions... hydraulically changes the cross-shift arm position to give the blade added reach.

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Bucyrus, Ohio U.S.A.

Builders of WARCO Motor Graders and HERCULES Road Rollers

WARCO® MOTOR GRADERS : MODEL 4D-100 HEAVY DUTY 100 HP : MODEL 4D-85 MEDIUM DUTY 85 HP

DISTRIBUTOR DOINGS

Twenty New Distributors Named by Clark Equipment

Dealers now handling Michigan excavator cranes for Clark Equipment Co., Benton Harbor, Mich., are Carleton F. Holbrook, Stoughton, Mass.; Tool & Supply Co., Washington, D. C.; and Quarry Supply Co., Miami, Fla. Handling only Michigan tractor shovels are Paving Supply & Equipment Co., Washington, D. C.; Blanchard Machinery Co., Miami,

Fla.; and Acme Iron Works, San Antonio, Texas.

Both lines of Michigan equipment will be handled by Portland Tractor Co., Inc., Portland, Me.; Ken Smith Machinery Co., Inc., Albany, N. Y.; Stith Equipment Co., Atlanta, Ga.; Morgans, Inc., Savannah, Ga.; Berry Equipment Co., Memphis, Tenn.; Industrial & Contractors Equipment Corp., Cleveland, Ohio; Bode-Finn Co., Cincinnati, Ohio; Deeds Equipment Co., Rochester,

Ind.; Bardale Equipment, Inc., Kirkwood, Mo.; Bert Smith Road Machinery Co., Enid, Okla.; and Construction Equipment Co., Ltd., Edmonton, Alberta, Canada. Florida dealers for both lines are Maykay Equipment & Supply Co., Pensacola; and Machinery & Supply Corp., Jacksonville.

Highway Machinery & Supply Co., Inc., Richmond, Va., will handle products of Clark's industrial truck division.

Warco Dealer in Northwest

Nelson Equipment Co., with sales and service headquarters in Portland, Oreg., and a complete branch operation at Seattle, Wash., is a new distributor for Warco motor graders manufactured by W. A. Riddell Corp., Bucyrus, Ohio.

B-E Appoints New Dealers

The Sim Grady Machinery Co., Macon, Ga., has been appointed by Bucyrus-Erie Co., to handle sales and service in the southern part of the state. The firm will handle the full line of $\frac{3}{8}$ to 4-yard convertible excavators and cranes, the 15 and 25-ton transit cranes, the Hydro-crane and Hydrohoe, and Red Arch dragline buckets.

From its headquarters at 1382 Guy Paine Road, the new distributor will serve a total of 81 counties in southern Georgia.

Eighty-five counties in Missouri and Illinois will be served by Euclid Sales & Service, Inc., St. Louis, Mo. This new distributor maintains headquarters at 5231 Manchester Ave.

New Mar-Rail Distributors

The Mar-Rail Conveyor Co., 560 York Ave., Pawtucket, R. I., has appointed 15 dealers in the United States and Canada to handle the Brik-Toter line of portable construction conveyors.

Two Connecticut dealers are Holmes-Talcott Co., 599 Franklin Ave., Hartford; and Arnold Co., 3255 Fairfield Ave., Bridgeport.

New York state distributors are Stillwell Equipment Corp., 233 Tarrytown Road, Elmsford; McDougall Equipment Co., Inc., 455 Court St., Binghamton; and Fox Equipment Co., 2018 Seneca St., Buffalo.

Those appointed in the south are Sim Grady Machinery Co., 1382 Guy Paine Road, Macon, Ga.; Equipment, Inc., Hi-way 80 W, Jackson, Miss.; McCarthy, Jones & Woodward, 723 Argyle Ave., Nashville, Tenn.; and Clearview Equipment Co., Inc., 2121 Gravois Ave., St. Louis, Mo.

Equipment Sales Co., 720 S. 19th St., Phoenix, Ariz.; W. J. Motsett, Inc., 324 S. Washington St., Peoria, Ill.; Herd Equipment Co., 916-922 N. W. 5th St., Oklahoma City, Okla.; and Roy Klossner Co., Euclid at Grayson, San Antonio, Texas, represent the company in the midwest and southwest.

Hulse Machinery Co., Inc., 3300 4th Ave. S., Seattle, Wash., is the sole appointment on the west coast, while Dietrich-Collins Equipment, Ltd., 890 S. W. Marine Drive, Vancouver, B. C., is the new Canadian dealer.

Galion Names Georgia Dealer

Truck Equipment Co., 20-24 14th St. N. W., Atlanta, is the new Georgia distributor for Galion Allsteel hydraulic hoists and dump bodies manufactured by the Galion Allsteel Body Co., Galion, Ohio. The dealer firm, which has a modern hoist and body installation department, has complete service facilities for Galion equipment.

R. A. Garner, president of the Atlanta firm, will direct sales.

Duncan Appoints Two Dealers

K. O. Duncan Co., Los Angeles, Calif., manufacturer of the hydraulic Roc-Jak, has established two new distributorships. Handling the equipment in Illinois is Casey & Emmert, Inc., 1424 W. Ohio St., Chicago. A. F. Deaney Co., 719 N. Pine St., Indianapolis, is a new Indiana distributor.



Only 2 Field Joints Needed for this 42-ft Sheet Steel Culvert

Three 14-ft sections of 18-in. diameter, galvanized-sheet-steel culvert pipe can be assembled into a 42-ft culvert with only two simple field joints. And it can be done in a few minutes.

Compare this with the number of joints and man-hours required to assemble an equivalent culvert of any other material.

Further, these sections of 18-in. pipe are made of 16-gage sheet, and they weigh about 214 lbs each. This means that they can be unloaded and placed in a trench by two men without the aid of special lifting equipment.

A MORE FLEXIBLE CULVERT PIPE

Pipe made from corrugated steel sheet is strong, flexible and tough, regardless of diameter. It will conform to grade and alignment without pulling apart. It can absorb changing loads caused by shifting or freezing soil.

Bethlehem does not fabricate culvert or drainage pipe, but does manufacture the Beth-Cu-Loy galvanized corrugated and flat steel stock used by pipe fabricators. This copper-bearing steel meets Federal specifications, as well as those of the American Association of State Highway Officials.

The heavy zinc coating and the copper in Beth-Cu-Loy sheets provide a double defense against rust. Their corrosion-resistance is excellent. Pipes made of this steel can be expected to give many years of trouble-free service.

Any Bethlehem sales office will gladly furnish detailed information.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETH-CU-LOY GALVANIZED CULVERT SHEETS



A. S. Rubin, left, talks over some problems with A. F. Woods, his successor as sales manager for Marlow Pumps.

Former Marlow Sales Manager To Set Up Florida Dealership

Succeeding A. S. Rubin as sales manager for the Marlow Pumps Division of Bell & Gossett Co., Ridgewood, N. J., is A. F. Woods. Mr. Rubin will become a Marlow distributor in Fort Pierce, Fla.

A former Marlow district engineer, Mr. Woods is being assisted by the company's engineering field staff, which is located in important trading areas. As sales manager, he will aid and cooperate with the company's selective dealer organization.

W. H. Anderson Co. Appoints New Sales Representatives

J. Lee Richards, a newly appointed sales representative for W. H. Anderson Co., Inc., 47 W. Seven Mile Road, Detroit, Mich., will cover 14 counties in Michigan for the company. He will make his headquarters in Alpena.

The W. H. Anderson Co. serves as a distributor for Lorain, Euclid, Worthington, American Chain & Cable, LaCrosse, and other manufacturers of heavy-construction equipment. The company's territory includes the eastern half of Michigan's lower peninsula.

Al Smythe has been appointed sales representative in the northwest Detroit-Lansing area. His territory includes part of Oakland and Shiawassee counties, and all of Livingston, Ingham, and Clinton counties.

Handling the Flint-Saginaw area is Robert J. LeFevre, who will serve as sales representative in Isabella, Bay, Midland, Gratiot, Saginaw, Genesee, Tuscola, and northeastern Shiawassee counties.

Herd Equipment Expands

The Herd Equipment Co., Oklahoma City, Okla., has opened a branch office at 5324 E. Admiral Place, Tulsa. The new office will serve northeastern Oklahoma.

George Straughan is manager of the Tulsa office, and Vernon Blagg is assistant manager and director of parts and service.

Texas Dealer for Koehring

W. L. Johnson Machinery Co., Midland, Texas, has been appointed a new distributor for Koehring Co., Milwaukee, Wis., in the west Texas area. Located on Route 1, Midland, the company will sell and service Koehring shovels, draglines, hoes, longitudinal finishers, Dumpsters, Mud-Jacks, Moto-Bugs, and Kwik-Mix products.

Gradall Dealer in the South

Construction Equipment Co., Birmingham, Ala., has been appointed distributor for the Gradall Division of the Warner & Swasey Co., Cleveland, Ohio.

The dealer, with headquarters at 2921 Second Ave. S., will be Gradall distributor for all of Alabama and northwestern Florida. R. F. McCullough is president of the company. Leo Reed is the manager of the dealer's branch in Mobile, Ala.

Pitnam Names L. I. Dealer

The Complete Machinery & Equipment Co., Inc., 36-40 11th St., Long Island City, N. Y., has been appointed by the Pitnam Industrial Products Co., as exclusive dealer for Pinazza rock drills and concrete-breaking

hammers. The dealer, which will handle the equipment in metropolitan New York and Long Island, has been conducting demonstrations in the use of the machine.

Pitnam is currently negotiating dealership arrangements in the United States and Canada on behalf of Societa Brevetti Pinazza, the Italian manufacturer of the units.

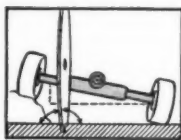
Earth Equipment Names Four Southern Dealers

Four southern firms have been added to the list of distributors of the Everett trencher, manufactured by the Earth Equipment Corp., Los Angeles, Calif.

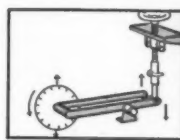
Dalrymple Equipment Co., Memphis, Tenn., and Amory, Miss., will cover western Tennessee and north-

(Concluded on next page, col. 3)

Use Genuine CLIPPER SAWS—and CLIPPER BLADES Perfect Combination for Joints—Trenches—Patches

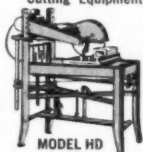


Self-Propelled... and powered by 25 Horsepower... Clipper's new C-250 "ConSawMatic" cuts the MOST concrete for the LEAST cost per foot! Exclusive 3-Point Suspension on rugged 4-wheel chassis eliminates blade binding, reduces wear. Improved Screw Feed for positive Depth Control, essential with new GreenCon Abrasive Blades. Easy to handle, gets you "on the line" fast, ready to cut in a hurry. FREE TRIAL will show you why "4 Out Of 5 Buy Clipper!"



by the Makers of CLIPPER MASONRY SAWS

World's first—and finest Masonry Saw. Clipper, world's largest manufacturer of Masonry and Concrete Cutting Equipment, sets a new standard for Quality Workmanship and Tested Performance. The name Clipper guarantees your Satisfaction!



MODEL HD
15 MODELS
Priced from \$265

SAME DAY SERVICE
FROM YOUR NEAREST
FACTORY BRANCH—



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- ST. LOUIS
- CLEVELAND
- DETROIT
- AUSTIN, TEX.
- CHICAGO
- LOS ANGELES
- HARTFORD
- Canada
- England
- France

NOW—You Can Cut Concrete with NEW CLIPPER "GreenCon" ABRASIVE BLADES

Savings you never dreamed of—as high as 80% with Clipper's new "GreenCon" Blades. Reinforced Abrasive Blades that knife through green concrete with limestone aggregate. Call or write Clipper today!

NEW Diamond Blades by Clipper—cut ANY concrete. There's new ease and speed in Clipper's improved blade specifications... for cutting green, cured or aged concrete. A blade for any job—any aggregate—every saw!



SIMPLE in operation
RUGGED in construction
DEPENDABLE in performance

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- CINCINNATI
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- ☐ CLIPPER MASONRY SAWS
- ☐ Can I get ConSawMatic on FREE TRIAL?

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SOLD ONLY DIRECT FROM FACTORY BRANCHES



The Gledhill-Elliott leaf loader.

Suction-Type Unit Loads Leaves on Truck

■ The Elliott vacuum-type leaf loader is now made by the Gledhill Road Machinery Co., Galion, Ohio. The Gledhill-Elliott Sucker Upper, similar to an oversized powerful vacuum cleaner, is mounted on a portable two-wheel trailer. An IHC Model U2A or Wisconsin Model VG4DU gasoline engine is used to drive a large blower.

Piping from the suction side of the blower is connected to a wide nozzle located just above the street level. The discharge side of the blower is connected to a large metal duct which leads to the collecting truck. A section of reinforced-rubber hose is used between the metal duct on the discharge side and the entrance to the truck to insure maximum flexibility. A special 10-inch-diameter hose is also available for attachment to the suction side of the blower.

Drawings which show how to build a leaf-container for the truck body can be furnished with each unit. The container has a framework of light steel, covered with screening or expanded metal.

For further information write to the company, or use the Request Card at page 18. Circle No. 279.

Chemical Spray Retards Grass Growth Along Roads

■ A water-soluble chemical that can be sprayed along highways to retard grass growth is described in literature from Naugatuck Chemical, Naugatuck, Conn. The brochure lists the advantages of spraying with the MH-40 chemical and tells how to apply the spray. It makes recommendations of types of sprayers suitable for this use and gives a table of recommended mixtures.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 210.

Joy Promotes Two

Walter J. Pilarski has been promoted to the position of manager of the contract core drilling division of the Joy Mfg. Co., Pittsburgh, Pa., and Frank M. Capp has been appointed manager of the firm's core drill division. Both men are filling positions left vacant by the death of J. B. Martin.

(Continued from preceding page)

ern Mississippi, respectively.

The Montgomery, Birmingham, and Mobile offices of Robert P. Stapp Machinery Co. will cover the entire state of Alabama. The distribution area of Contractors Service, Inc., Charlotte, N. C., has been extended to include the state of Virginia.

Cleaver-Brooks Dealer Named

A new dealer for boiler equipment manufactured by Cleaver-Brooks Co., Milwaukee, Wis., is the Harold R. White Co., Baltimore, Md. The company, located at 3600 4th St., Arundel Federal Building, will cover a territory which includes Washington, D. C., western Maryland, northern Virginia, and three West Virginia counties.

New Dealer for Heil

Black Hills Oldsmobile-Cadillac, Inc., has been appointed by the Heil Co., Milwaukee, Wis., to handle the company's line of dump bodies and hoists, refuse bodies, and Heil loader elevating truck tailgates. The Rapid City, S. Dak., distributor will cover the counties of Fall River, Custer, Pennington, Lawrence, Meade, Perkins, Harding, and Butte.

Huber Names Dealer

The Mississippi Road Supply Co., Jackson, Miss., is now handling the line of road machinery made by the Huber Mfg. Co., Marion, Ohio. The new dealer will serve the entire state with the Huber maintainer, 5 to 12-ton three-wheel rollers, and 3 to 14-ton tandem rollers.



Drainage and utility 202 Trenchliner (above) combines big work capacity with precision grading accuracy . . . produces up to 17½ feet of trench per minute. Digging wheel holds accurate grade, responds instantly to friction clutch control. Quick-change bucket fronts have cutting lips or teeth to suit soil conditions. Tile box and chute (optional) save time, labor on drainage jobs. Ground pressure is only 5 or 6 lbs. PSI with 16 or 20-inch rail-type crawler treads. Gas or diesel power.

Cross-country 215 Trenchliner (left) brings you all the high-speed digging advantages of wheel-type trenching . . . plus the increased traction of standard tractor crawlers, 18-inch treads and lug-type shoes. It digs up to 18 feet per minute, 13 to 31 inches wide, 6 feet deep. Hinged crumbler sweeps trench bottom clean, ready for pipe. Choice of 2 standard 55 h.p. diesel engines.

Other big-production advantages of these 2 Parsons wheel-type Trenchliners include: square or round-bottom buckets . . . cleaners for both solid or time-back buckets . . . self-sharpening, easy-in-easy-out "Tap-In" teeth. For complete details, contact Parsons distributor, or write.



Also check Parsons for ladder-type Trenchliners: 3 heavy-duty sizes, all full crawler mounted, and rubber-tired Trenchmobile®.

PARSONS Trenchliners®
NEWTON, IOWA (Kuehling Subsidiary)

Conversion Slide Rule Determines Equivalents

■ A new conversion slide rule having 64 linear, liquid, energy, and miscellaneous factors on one side, plus a complete trig scale arrangement on the reverse side, consisting of A, K, DF-CF, T, S, CI, C-D, and L scales, is manufactured by Pickett & Eckel, Inc., 1109 S. Fremont Ave., Alhambra, Calif. By positioning a "conversion mark" opposite an index mark, any conversion is automatically set and read on the C, D, CF or DF scales without moving the slider and with no computation. The same automatic conversion principle is adaptable to any set of specialized conversion factors on either pocket-size or 10-inch rules for any line of work.

For further information write to

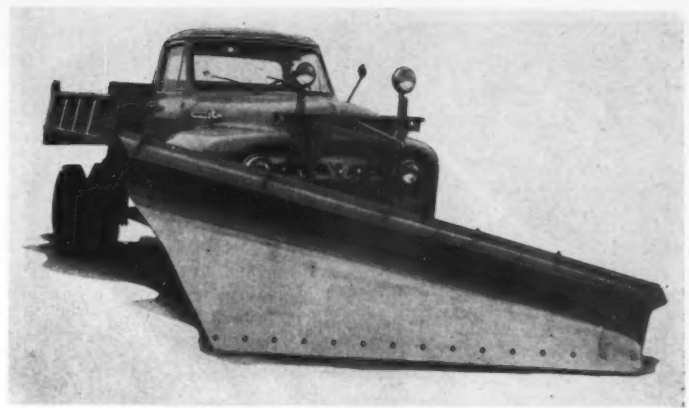
the company, or use the Request Card that is bound in at page 18. Circle No. 300.

Engine Starting Fluid For Cold-Weather Use

■ A fluid for cold-weather starting of internal combustion engines using gasoline, diesel, or tractor fuel is described in a folder from the Lewis-Diesel Engine Co., 92 W. Carolina Ave., Memphis 2, Tenn. Lewisene is sprayed into the air-intake, either through the primer equipment permanently installed in the engine or by a spray gun.

The company can also furnish primer equipment for any type of engine.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 305.



Davenport-Besler's new Trip-Rite snowplow.

Snowplow Features Improved Tripping

■ A new one-way trip-type snowplow has been added to the line of Davenport-Frink Sno-Plows manufactured by Davenport-Besler Corp., 2305 Rockingham Rd., Davenport, Iowa. Firm tripping and instant righting without shock damage to the power vehicle are features claimed for the new Trip-Rite snowplow.

A new toggle arrangement is employed as part of the tripping mechanism. As it functions, the impact shock begins instantly to decrease. The snowplow is available in sizes for 1½, 2 to 3, and 4 to 5-ton trucks.

For further information write to the company, or use the Request Card at page 18. Circle No. 307.

How to Operate a Grader

■ A booklet on how to operate a motor grader has been issued by The Galion Iron Works & Mfg. Co., Galion, Ohio. Some of the subjects covered in the booklet are the hydraulic control system, steering, tips on leaning the front wheels, proper positioning of the blade, moldboard pitch adjustments, reverse blading, bank sloping, ditching, road maintenance, turning the grader around, correct use of gear speeds, and snow removal.

The instructions in this booklet, done in cartoon style, are said to be based on the procedures used by the foremost expert on motor-grader operation.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 184.

Tools for Fastening Wide Conveyor Belts

■ The fastening of wide conveyor belts can be done faster with new specialized tools, according to a bulletin from the Flexible Steel Lacing Co., 4704 Lexington St., Chicago 44, Ill.

The new power-tool wrench described is used with an electric or air-impact tool to speed the tightening of nuts on fasteners. A boring punch, used with an impact tool, bores the bolt holes quickly.

The literature describes the use of these Flexco tools along with the double-purpose templet, Alligator wide-belt cutter, and "C" cartons of assembled bottom plates, which the manufacturer claims will save belt-maintenance time.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 197.

Kwik-Mix Moto-Bug® carries 1500-lb. load

Moto-Bug power wheelbarrow hauls 10 cu. ft. (or 1500 lbs.) of any bulk materials. Has instant gravity-dump, with snub-line control. Climbs 20% ramps or grades. There's full power forward and reverse... and safe, automatic brake control. Hopper is interchangeable with 1500-lb. platform, or ½-ton (5-ft.) fork lift. Send for Moto-Bug bulletin. Also check Kwik-Mix line of concrete mixers, bituminous and plaster-mortar mixers.

KWIK-MIX • Milwaukee, Wis.
(Koehring Subsidiary)



Johnson fast-filling "Hi-Speed" Batcher

handle 2, 3 or 4 materials. Extra-wide 15"x36" fill valves and wide bin top openings reduce charging time... steep side slopes give fast, clean discharge. Standard batcher handles 34-E paver batch. For charging truck mixers, 4 material "Hi-Speed" Batcher can be furnished with 2, 3 or 4-yd. weigh hoppers having double clam discharge gate and collector ring. Also check the complete Johnson line of mix plants, bins, buckets and silos.

C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)



More work-time with Koehring ½-yd. 205

There's no time-out for continuous manual clutch adjustments... no "compromise" settings with this Koehring heavy duty ½-yard. All main clutches are self-adjusting... heat-compensator springs make tension changes automatically. This maintains big yardage performance with shovel, hoe and dragline, is equally important on intermittent usage of crane and clam-shell work. 3 larger sizes up to 2½ yds., cranes to 79½ tons.

KOEHRING Company
Milwaukee 16, Wis.



242



Controlled discharge with Parsons shiftable, reversible spill conveyor lets operator place spoil bank on either side of trenchline. Belt speeds synchronized with digging speeds.



Looking north along the excavation for the Grant Park Garage in Chicago's Loop area. The base slab has been poured, and forms are being constructed for the columns and first-level floor. Utilities are being relocated along the west side of Michigan Avenue (left background).

CONSTRUCTION of a two-level parking garage beneath Chicago's famed Michigan Avenue and adjacent Grant Park is an \$8,300,000 project involving tearing up the thoroughfare and rerouting heavy Loop traffic. Understandably, then, a contractor's bonus (or penalty) of \$500 a day to speed certain stages of the job is provided for in the contract with the Chicago Park District.

John Griffiths & Son Construction Co., Chicago, general contractor for the project, accepted the challenge at the very outset and pushed the

first stage to completion 86 days ahead of schedule, thus earning himself a handsome bonus. This stage included erection of a detour for Michigan Avenue traffic through Grant Park, tearing up of three blocks of the street, construction of part of the garage, and rebuilding the street. This work was scheduled for completion February 4 of this year, but Griffiths finished it November 9, 1953.

Stage 2 of the project involves removal of a portion of Grant Park and completion of the garage under-

Contractor on huge

Underground Garage Job

beats schedule despite need for rerouting traffic, protecting building footings

neath. This stage, completed before the November 4 deadline, permitted the garage to be opened early this month.

The project is a major step toward a solution to one of Chicago's parking problems. Designed by Ralph H. Burke, Inc., Chicago engineering firm which is also supervising construction, the structure will accommodate 2,360 vehicles. The two parking levels will be reached from the street by ramps, and escalators will facilitate pedestrian travel to and from the garage.

Extending from Randolph Street on the north to Monroe Street, three blocks south, the garage measures 1,210 feet in length. In width, it spans from the west or Loop-side curb of Michigan Avenue to the Illinois Central railroad tracks in Grant Park. The width varies from 360 feet at the southern end to 238 feet at the northern end.

Entrance ramps from the avenue are so arranged that either northbound or southbound traffic can enter the garage without crossing traffic lanes. Exit ramps in both directions make it convenient for vehicles leaving the garage to merge with the flow of traffic. An underground connection to the Illinois Central station across Randolph

Street allows pedestrians to get to and from the station without going up on the street.

Founded on undisturbed clay, the base slab of the structure is approximately 22 feet below street grade. Cylindrical columns with capitals and drop panels are spaced on 29-foot centers both ways to support the flat slab floor system. A 3-inch bituminous surface covers the concrete slab on the roadway area at the street level. Curbs, sidewalks, and dividing medians are of concrete.

Detour Is First Step

The first two stages of the project represent substantial completion of the garage ready for use. A third stage, restoration of Grant Park, is scheduled for completion by February, 1955, and carries a much smaller penalty-bonus.

The initial item in the first stage of construction consisted of building a detour for Michigan Avenue through the easterly edge of the park adjacent to the railroad tracks. All utilities in the street area were then relocated under the westerly sidewalk. The entire 3-block area was excavated down to foundation grade and the reinforced-concrete structure erected. Restoration of



MODEL 67AH
750 watts
Dolly-mounted

*There's no long costly waiting for electric power with portable Onan Electric Plants on the job. Easily wheeled or carried around; furnish instant plug-in power for saws, planers, drills, sanders, pumps, pipe-threaders, electric hammers, lights, etc. High capacity electric plants for large jobs can be brought to the site on truck or trailer.

Onan 4-cycle engine-driven electric plants start easier, run longer without attention, give more years of dependable service.

Make more profit on every construction job with portable Onan Electric Plants.

**Plug-in*
Electric Power**

**When you need it!
Where you need it!**

**ONAN Portable
Electric Plants**

ONAN Portable Electric Plants:
Gasoline powered—400 to 10,000 watts.
A. C. (60 and 180-cycle), and D. C. models.

Write today for **FREE Folder**



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Experience Tells

Omaha Dragline Buckets are the product of more than 44 years bucket building experience. They have been tested and proved on the job. Ask the contractors who use them. They'll tell you, "You just types to fit your needs. Write today for catalog giving complete information and specifications."

**OMAHA
DRAGLINE BUCKETS**

DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.



Interior view of the garage. Ventilation, plumbing, and lighting are being installed.
C&E Staff Photos

Michigan Avenue to traffic completed this stage.

Removal of the detour road opened the second stage. The entire park area adjacent to Michigan Avenue was excavated down to grade and the balance of the garage constructed. Upon completion of this stage, the entire garage was made ready for use.

To carry the heavy traffic around the three-block project during eight months of construction required an unusually high-type detour. The roadway was brought to grade with material from the excavation. Twelve inches of carefully compacted crushed stone provided a base course which was covered with a 2-course 3-inch mat of hot-mix bituminous surfacing. Rock Road Construction Co., Inc., Chicago, furnished and placed the bituminous surfacing on the detour as well as the finished roadway.

Protect Tall Buildings

Excavating to depths exceeding 20 feet very close to the row of tall buildings which line the west side of the project called for extreme measures to avoid damage to any of these structures. Some of these buildings exceed 20 stories in height and are founded on caissons or

piling. The worst hazard, however, was presented by one 14-story building resting on spread footings which were 9½ feet above the bottom of the excavation. Other buildings of lesser height, also on spread footings, presented additional settling hazards.

Griffiths drove a solid wall of sheet piling along the entire west face of the excavation, shoring the sheathing with heavy steel and timber braces. This sheathing became the outside form for the concrete retaining walls and was left in place when the walls were poured. Before driving the sheeting, the contractor relocated a 90-inch combined sewer outside the west wall of the excavation. This project also involved relocation and construction of numerous building vault walls along the length of Michigan Avenue.

Excavating equipment included three big shovels and a fleet of heavy trucks with 8 to 10-yard dump boxes. This spread was able to move the 330,000 cubic yards of earth in short order. Largest of the shovels was a Bucyrus-Erie 51-B with 2½-yard backhoe. A B-E 44-B with a 2-yard dipper attachment and a 38-B dragline with 1¾-yard bucket were the other machines. Speedway

(Continued on next page)



Alexander Hamilton Memorial, Chicago, Illinois, R. C. Wieboldt, General Contractor

Symons Forms with Steel Ribs

Curved 10' wall is aligned without walers by using alternate 2' x 6' and 2' x 4' panels with plates top and bottom. Braced on one side only. Same panels reused for straight walls and battered walls. Form work follows form layout made by Symons engineering department from architectural plans.

Send in the plans for your next job and get complete form layouts and job cost sheets—no obligation. Symons Clamp & Mfg. Co., 4251-14 Diversey Ave., Chicago 39, Ill.

Aetna bonds contracts totalling
\$50,615,494 on the new
OHIO TURNPIKE

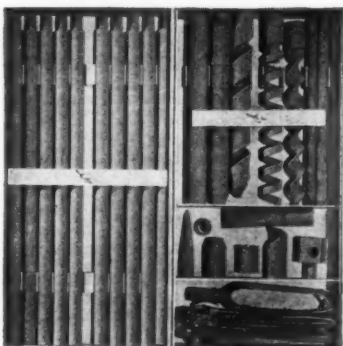
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Recovers accurate,
undisturbed samples.



the ACKER SOIL SAMPLING KIT

More than 30 years of soil sampling experience all over the world has proven that this kit is the most versatile, portable collection of soil sampling tools you can buy!

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WRITE TODAY FOR PRICES AND BULLETIN 30, C&E

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue
Scranton, Penna.

A complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

SEPTEMBER, 1954

The Aetna Casualty and Surety Company has written bonds on contracts totalling \$50,615,494 for contractors engaged in construction of the new 241 mile Ohio Turnpike. This represents nearly one fourth of the super highway's total estimated cost of \$211,875,568.

Here is impressive evidence of the confidence Aetna enjoys among some of the country's leading general contractors, who know that Aetna's coast-to-coast service facilities match their own countrywide operations. They know, too, that Aetna's experienced and cooperative personnel can expedite the prompt handling of their bonds, no matter where their next project is located — or how complex it may be.

Next time you need a bond, why not call the Aetna representative in your community and join the ranks of hundreds who bond with Aetna — always.

No job too big — no job too small

AETNA CASUALTY AND SURETY COMPANY

AFFILIATED COMPANIES: AETNA LIFE INSURANCE COMPANY

AUTOMOBILE INSURANCE COMPANY • STANDARD FIRE INSURANCE COMPANY

HARTFORD 15, CONNECTICUT



(Continued from preceding page)

Wrecking Co., Chicago, was the excavation subcontractor.

Much of the material excavated was filled ground containing everything imaginable. Brickbats and other debris were mixed with earth fill and dredged sand. Underneath was the undisturbed clay stratum on which the foundations rest. All of the excavation had to be hauled away from the project. Some was dumped on a park area within 500 yards of the site, and the remainder was hauled to the Lake Shore Drive Extension project about 10 miles north.

Individual trucks were not assigned to specific machines, but were directed to the rig which was ready to start loading. In this way, all three shovels were kept operating on a nearly continuous basis, and trucks had a minimum of waiting for loads. Because of the extremely heavy traffic in the late afternoon, excavation operations were started early in the morning and halted about 3:30 o'clock in the afternoon.

Concrete Is Pumped

Traffic also affected the concrete-pouring operations. Ready-mix concrete, supplied by Material Service Corp., Chicago, was poured at night to keep the ready-mix trucks off the street during the hours of heaviest traffic. In the earliest stage, mixers



A Bucyrus-Erie 44-B shovel with 2-yard dipper loads the 10-yard dump box of a White truck as excavation gets under way on the 3-block-long garage project. Care is exerted that spread footings for some of the buildings are not disturbed during the excavating.

C&E Staff Photo

discharged directly into the hoppers of two Rex Pumpcrete machines which delivered the concrete to the forms. Some concrete was also placed by cranes and buckets, and some was wheeled to the forms in buggies.

Much of the concrete in the second stage of construction—underneath Grant Park—was placed by means of a 60-foot Barber-Greene conveyor with a 24-inch belt. The

conveyor has made it possible to pour up to 120 cubic yards of concrete per hour. While not adaptable for use in the first stage, the machine has often doubled the rate of placement in the initial pouring operations.

Using a Nelson stud gun, workmen welded special studs to the steel sheathing which served as the outside form for the west retaining wall. Superior form ties and cones were

attached to this sheathing. The wall was formed and poured in 8-foot sections, the shoring being removed from one section at a time as the wall was built. The wall was then reshored until such time as lateral support could be furnished by pouring intermediate floors and the roof deck.

The cylindrical columns were cast in DesLaurier column molds. Shores for supporting slab forms were made up of two pieces clamped together with Elis clamps to make adjustable supports. Plywood slab forms were supported on adjustable steel joists. A P&H truck crane and a Manitowoc 2000B crane assisted in setting the forms, placing reinforcing steel, and bucketing concrete to the forms, as well as miscellaneous excavation.

Approximately 25,000 cubic yards of concrete was poured in the first stage at a rate of about 1,150 cubic yards per week. This rate was later stepped up in pouring the 40,000 yards for the second stage. Approximately 8,000,000 pounds of reinforcing steel are going into the two stages.

Normal mix for the 4,000-pound structural concrete consisted of:

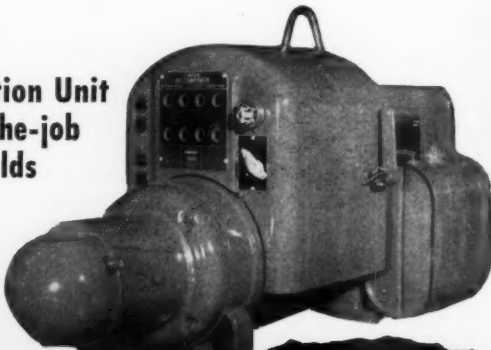
Portland cement	564 lbs.
Fine aggregate	1,472 lbs.
Coarse Aggregate	1,909 lbs.
Water	31.8 gal.

Darex air-entraining agent was used to provide 3 to 6 per cent air in the mix.

Provision for an ample supply of

New Combination Unit furnishes on-the-job power and welds

"Weldanpower" Low-priced Lincoln Combination Welder and Standby Power Unit. Powered by air-cooled engine. Weighs only 550 pounds.



Saves Time and Money on Jobs like these



Powers Electric Pumps



Hardsurfaces Scraper Blades



Repairs Machinery



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Runs Power Drills and Saws

COST SAVING IDEAS FROM LINCOLN

HERE'S dependable on-the-job power for lights, for driving power tools and other construction needs before electric power becomes available. But that's not all. With the same unit you can repair emergency breakdowns right away ... at low cost by arc welding.

As an on-the-job power unit, "Weldanpower" delivers 4 KVA continuous duty, 5 KVA intermittent duty AC power,

230/115 volts, 60-cycle, single-phase current.

As a welder, "Weldanpower" furnishes up to 200 amps AC current ... repairs machinery, hardsurfaces parts that wear from impact or abrasion. The unit is also used for constructing new equipment.

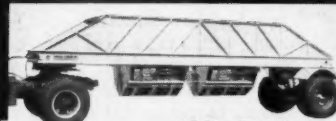
Welding can be done at the same time that emergency power is being used. Write for Bulletin 1339 giving details.

THE LINCOLN ELECTRIC COMPANY

Dept. 5304 • Cleveland 17, Ohio

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

HAUL LARGER LEGAL PAYLOADS ...



10 Yard Single Axle

With An



CENTER DUMP SEMI - TRAILER

Built to job specifications, single or tandem axles. Conforms with state highway laws in capacities from 10 to 20 yards and over. Light-weight, high tensile steel construction. All bracing external; load area clear. Mechanically operated hopper doors standard. Air-actuated trips, or hydraulic controls for both opening and closing also available. All trip mechanisms metered to control flow of materials. Hopper doors built to stand bucket loading. Because contractor's equipment must be kept running, these trailers are designed to be repaired locally, eliminating delays due to waiting for parts. Any mechanic can service or repair. Write now for full information and address of your nearest distributor.



14 Yard and Over Tandem Axle for Single or Tandem Axle Trucks.

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Dept. 2, 2401 W. Broadway
COUNCIL BLUFFS, IOWA

OMAHA STANDARD DISTRIBUTORS

COLORADO—Gunderson-Taylor Machy., 1237 Shoshone, Denver; Gunderson-Taylor Machy., Grand Junction.
FLORIDA—Hunt Truck Sales & Service, Inc., 211 S. Tampa St., near Platt, Tampa; Hunt Trailer Sales, 2155 N. W. 27th Ave., Miami.
ILLINOIS—Mutual Wheel Co., 2345 4th Ave., Moline.
KANSAS—Newlin Machy. Corp., 641 S. W. Blvd., Kansas City 3; Jack Spratt Road Machy. Co., 126 S. Wichita, Wichita.
MINNESOTA—Blawett-Hanson, 2910 University Ave., S. E., Minneapolis 14; Bowen Trailer Sales, 1619 N. Front St., Mankato; Arrowhead Equip. Co., 2931 W. Superior St., Duluth.
MISSOURI—D. B. Avery Co., 1325 Macklind Ave., St. Louis.
NEW MEXICO—N. C. Ribble Co., 1304 N. 4th St., Albuquerque.
OREGON—Gramer Machy. Co., 1005 E. Stark St., Portland 14.
S. DAKOTA—Pecaut Equip. Co., 900 E. 8th St., Sioux Falls.
TEXAS—Borden Machy. Co., 1710 Paisano Dr., El Paso.
UTAH—The Lang Co., 1st So. & 2nd W., Salt Lake City 10.
WASHINGTON—Tri-State Equip. Co., E. 320 Trent Ave., Spokane.
WISCONSIN—Brake & Equip. Co., 5225 W. State St., Milwaukee 8.
CANADA—Americoma Trailer Sales, Ltd., 160-104th St., Edmonton, Alta.; Transport Equip. Co., 1289 Albert St., Regina, Sask.

Yours for the Asking

An extra set of tear sheets of any CONTRACTORS AND ENGINEERS article you may wish to file for future reference.

Our Reader Service Dept. will send such articles pasted on standard file size sheets if you request it.

CONTRACTORS AND ENGINEERS

fresh air and removal of dangerous and objectionable fumes is particularly important in any underground garage. On this project, with the entire roof of the garage consisting of street and park, it was necessary to disguise the intake and outlet structures. This was cleverly done by incorporating the intake louvers into the backs of permanent concrete park benches. Exhaust air leaves the building on the east side against the railroad tracks. The Haines Co., Chicago, installed the ventilating system.

Electrical installations were made by J. Livingston & Co., Inc., and White City Electric Co., both of Chi-

cago. Plumbing was installed by Commonwealth Plumbing Co., Inc., Chicago. Steam heating facilities in waiting rooms and other enclosed areas were subcontracted to M. J. Holleran, Inc., Chicago. Six passenger escalators were furnished and installed at entrances and exits by Otis Elevator Co.

Personnel

Superintendent for John Griffiths & Son Construction Co. was F. W. Winter. W. D. Matthews and W. E. Myers are assistant superintendents. Resident engineer for Ralph H. Burke, Inc., is John D. Simpson.

THE END

Snow Melting Combats Winter Traffic Problems

A report discussing snow-melting systems designed to forestall winter traffic problems is announced by the Engineering Service Department, A. M. Byers Co., Clark Bldg., Pittsburgh, Pa. The brochure describes snow-melting systems in which heated water mixed with antifreeze is circulated through wrought-iron pipe coils or grids embedded in paved roadways.

Much of the report is devoted to snow-melting systems serving roads and highways. The last half of the report tells, in words and pictures,

of snow-melting facilities installed in such off-the-street areas as driveways and parking spaces.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 225.

Sawyer & Son Appoint

Willis M. Partridge, Jr., last month assumed the post of assistant sales manager of the protective and safety clothing division of The H. M. Sawyer & Son Co., Cambridge, Mass. He will function as field supervisor of sales, and most of his time will be spent with distributors to extend help to jobber-salesmen.

DISTRIBUTORS

ALABAMA—Tractor & Equipment Co., Inc., 4402 First Ave. N., Birmingham 1; 599 Chase St., Decatur. Ray-Spears Machinery Co., 2375 W. Fairview Ave., Montgomery; P. O. Box 357, Mobile.

ALASKA—Western Tractor & Equipment Co., Box 2032, Anchorage; Box 407, Fairbanks.

ARIZONA—Auto Tractor & Equipment Co., 467 S. 17th Ave., Phoenix. Lively Equipment Co., Albuquerque, N. M.

ARKANSAS—Euclid-Arkansas, Inc., 702 W. Second St., North Little Rock.

CALIFORNIA—Geo. M. Philpott Co., Inc., 1508 Bryant St., San Francisco 33; 100 Maple St., Mantoloking; Sierra Machinery Co., Inc., P.O. Box 1330, Reno.

CANADA—District Colling Equipment Ltd., 990 S. W. Marine Dr., Vancouver 14, B. C. Ferguson Supply Alberta Ltd., Calgary, Edmonton and Lethbridge, Alberta. S. H. Goddall Equipment Ltd., 28 Jackson Ave., Toronto; P. O. Box 187, Port Arthur, Ontario; P. O. Box 69 N.D.C., Montreal, Que. Maritime Newfoundland Agencies Ltd., P. O. Box 822, Halifax, N. S.

COLORADO—Colorado Builders' Supply Co., 1300 West Evans Ave., Denver.

CONNECTICUT—The W. I. Clark Co., 2195 Dinwiddie Ave., New Haven.

DELAWARE—L. S. Smith, Inc., Camp Hill, Penna.

FLORIDA—Florida-Beverly Tractor Co., 2800 N. Beaver St., Jacksonville; 2419 State St., Lakeland; 3125 No. Miami Ave., Miami; 1401 S. Orange Blossom Trail, Orlando; New Quincy Highway, Tallahassee; 216 S. 13th St., Tampa.

GEORGIA—Tri-State, Inc., 600 Glenwood Ave., S.E., Atlanta 1; East Side Highway, Macon; Olive St., Augusta; 712-14 N. Washington St., Albany.

HAWAII—Brook Brothers, Ltd., 770 Ala Moana Road, Honolulu 10, Hawaii.

IDaho—Intermountain Equipment Co., Broadway at Myrtle St., Boise; 210 No. 4th St., Pocatello.

ILLINOIS—Gil Beers Equipment Co., 7825 South Kedzie Ave., Chicago 49. Euclid Sales & Service, Inc., St. Louis 10, Mo.

INDIANA—Raid-Holcomb Co., 1815 Kentucky Ave., Indianapolis 21; Gil Beers Equipment Co., Chicago 29.

IOWA—Norman M. Brown Co., Des Moines, Cedar Rapids and Sioux City; Euclid Sales & Service, Inc., 2001 S. 10th, Des Moines.

KANSAS—The G. W. Van Kappel Co., Kansas City 2.

KENTUCKY—Euclid-Kentucky, Inc., 3800 Crittenton Drive, Louisville.

LOUISIANA—Euclid-Memphis Sales, Inc., Memphis 2.

MAINE—N. A. Burditt, Inc., Route 1, R.F.D. 2, South Portland.

MARYLAND—Bliss Equipment Co., Clarksburg, W. Va. L. S. Smith, Inc., Camp Hill, Penna.

MASSACHUSETTS—Clark-Wilson Co., 118 Western Ave., Boston 34. The W. I. Clark Co., New Haven, Connecticut.

MICHIGAN—W. H. Anderson Co., Inc., 47 West Seven Mile Rd., Detroit 3. The Euclid Road Machinery Co., Hibbing, Minn.

MINNESOTA—The Euclid Road Machinery Co., Highway 100 West, Hibbing.

MISSISSIPPI—Euclid-Memphis Sales, Inc., Memphis 2.

MISSOURI—Euclid Sales & Service, Inc., 3321 Manchester Ave., St. Louis 10. The G. W. Van Kappel Co., 2441 Parkway, Kansas City 8.

MONTANA—Hall-Parry Machinery Co., P. O. Box 1387, Butte.

NEBRASKA—Fahrs Tractor & Equipment Co., 1906-11 Cumming St., Omaha 2; Colorado Builders' Supply Co., Denver.

NEVADA—Sierra Machinery Co., Inc., P. O. Box 1230, Reno; Geo. M. Philpott Co., San Francisco; Monterey, California. Foreign Equipment Co., Salt Lake City 3, Utah.

NEW HAMPSHIRE—Clark-Wilson Co., Boston 34, Mass.

NEW JERSEY—L. S. Smith, Inc., Camp Hill, Penna. Hubbard & Pineda, Inc., New York 51, N. Y.

NEW MEXICO—Lively Equipment Co., 3801 St. North St., Albuquerque.

NEW YORK—Hubbard & Pineda, Inc., 181st St. & Grand Ave., New York 61. T. E. Fells Equipment Co., 2380 Sheridan St., Buffalo. L. S. Smith, Inc., 28 W. Fayette St., Syracuse 2; 136 State St., Albany.

NORTH CAROLINA—North Carolina Equipment Co., P. O. Box 850, Greenville 10. D. O. 1283 Charlotte-Swanton Creek Rd., Asheville; P. O. Box 128, Guilford; P. O. Box 688, Wilmington. Hampton Roads Tractor & Equipment Co., Norfolk, Virginia.

NORTH DAKOTA—Northwestern Equip. Co., Box 152, Fargo. Northwestern Equip. Co. of Minn., Box 336, Minn.

OHIO—The W. W. Williams Co., 535 Sandale Blvd., Columbus 2; 12301 Broadway St., Chatsworth; 11-14 Main St., Cincinnati 10; 1300 Grand St., Toledo (Reamer).

OKLAHOMA—Butler-Spears Equipment Company, Oklahoma City and Tulsa.

OREGON—Intermountain Equipment Co., Boise, Idaho. P. L. Crooks & Co., 3148 N.W. Patterson St., Portland.

PENNSYLVANIA—Atlas Equipment Corp., 639 Ridge Ave., Pittsburgh 15. Standard Equipment Co., 193 Horton St., Williamsport; Hepburn & Lyman, 812, Williamsport. L. S. Smith, Inc., Camp Hill (Harrisburg); 288 & Montgomery Avenue, Philadelphia.

RHODE ISLAND—Clark-Wilson Co., 2323 Pawtucket St., E. Providence.

SOUTH CAROLINA—Southern Equipment Sales Co., Sumter Highway, Columbia.

SOUTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.

TENNESSEE—Euclid-Memphis Sales, Inc., 185 E. Butler Ave., Memphis 2. Power Equipment Co., 1219 Island Home Ave., Knoxville 400. W. H. Williams Co., Chattanooga; 121 Clay St., Kingsport.

TEXAS—The Euclid Road Machinery Co., 1007 Leves St., Dallas 2. Lively Equipment Co., P. O. Box 1426, El Paso.

UTAH—Foreign Equipment Co., 1281 So. 2nd West, Salt Lake City 2.

VERMONT—Clark-Wilson Co., Boston 34, Mass.

VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 39th and Kilham Ave., Norfolk. Rich Equipment Co., 1801 Chamberlaine Ave., Richmond 10; 408 Center Ave. N.W., Roanoke 7.

WASHINGTON—Western Tractor & Equipment Co., 2230 First Ave., Seattle 4; 985 Private St., Chehalis; Rt. 12, Box 84, Tacoma. Intermountain Equipment Co., E. 811 Sprague Ave., Spokane 8. P. L. Crooks & Co., Portland, Oregon.

WEST VIRGINIA—Atlas Equipment Corp., Pittsburgh. Rich Equipment Co., Kanawha Blvd., Charleston 22. East on U. S. 29, Clarksburg; P. O. Box 289, Bluefield.

WISCONSIN—Cunningham-Ortmeyer Company, Milwaukee 48. Sam Clark and Green Bay. Foreign Equipment Co., Salt Lake City 3, Utah.

OPERATION: Blue Jay at Thule, Greenland



Three years ago the Army Corps of Engineers was ordered to rush construction of a giant air base at Thule in the Arctic region of northern Greenland. Architects, engineers and contractors were faced with tremendous new problems in this land of continual ice and snow where winds blow up to 150 miles an hour and temperatures drop to 30 or 40 below.

It was a big job with 12,368,000 cu. yds. of heavy excavation and fill. Because of its importance to our national defense, it had to be completed on schedule. The selection of earth moving equipment for Thule had to be made carefully for men and machines would work under the most adverse conditions . . . and they had to keep working round the clock until the project was completed.

Rear-Dump Euclids—67 of them in all—played a leading part in this record breaking earth moving project. They moved big loads of rock from quarries to crushing plants on long and short hauls. Asphalt for runways was hauled by "Eucls" with heated bodies that kept the material from freezing in spite of the

bitter cold. Their rugged strength and dependable performance kept these Rear-Dumps on the job under the toughest working conditions imaginable . . . with mighty little down time for repairs.

Many of these "Eucls" have now been given another tough assignment by the East Ocean Division of the Army Corps of Engineers . . . they are being transferred to Iceland for more heavy service. On every one of the many defense installations being built by the East Ocean Division in Canada, Iceland and Greenland, "Eucls" are on duty taking the toughest jobs in stride.

When you need earth moving equipment that you can depend on for performance and profits, get in touch with your nearby Euclid distributor.

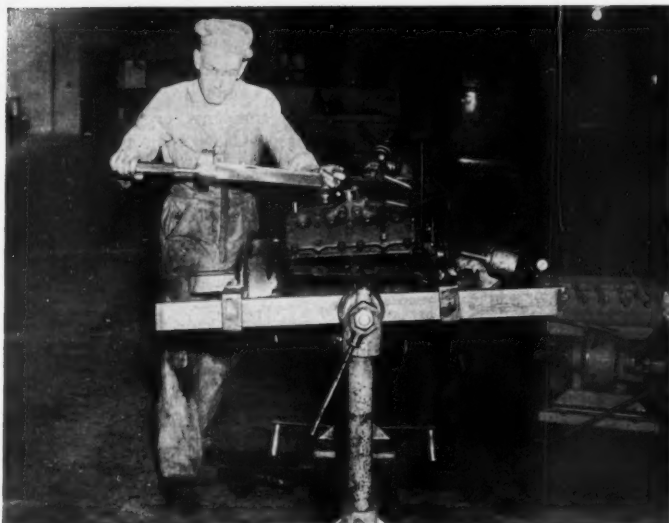
EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE





Lower Maintenance Costs Through Advance Planning

Head bolts on an engine which has just been overhauled are tightened with a Proto automatic torque wrench by one of the division mechanics. Before being used, the engine will be tested by being run on this stand. *Ray Day Photo*

Designed for PROTECTION



Styles illustrated
50-20 Jacket
51-05 Pants
53-15 Hat

BUILT FOR WEAR

Sawyer's "FROG" BRAND CLOTHING

can take it!

Tough — wears like iron, takes endless snagging, scraping, chafing and still gives full protection.
Rotproof — not affected by oils or chemicals — will not blister, crack or peel.

Waterproof — made with top quality base fabric, first saturation-coated, then coated on the inside as well as on the outside with specially blended Neoprene Latex.

Many styles — in black, yellow or Hunter's green
Write for catalog

THE H. M. SAWYER & SON CO.
Cambridge, Mass.

NECESSITY, not expediency, is responsible for Montana's policy of stretching its road dollar as far as possible. One of the largest states in area in the nation, it has a population about equal to that of the city of Seattle. For this reason, its road needs and road revenues must be juggled carefully to make them balance. Only by mechanizing maintenance and construction operations as much as possible has the state been able to make its road funds do a better job.

Fighting the cost battle in the 600-mile road system of the six northwestern counties is a crew of seven mechanics, which works under L. H. Margetts the division mechanic of the State Highway Commission at Missoula. Margetts has charge of the division's huge 280-unit equipment fleet which includes practically every machine needed for highway construction and maintenance. And it's his conviction that competent operation of this equipment, prompt repair, and careful periodic inspection will save the state money that can be spent more profitably elsewhere on the road system.

Ample Repair Facilities

The main equipment-repair building at Missoula is a modern brick and concrete structure measuring approximately 100 x 80 feet. Heavy equipment, such as the division's $\frac{3}{4}$ -yard Link-Belt Speeder shovel, truck-mounted Quick-Way backhoe, compressor, or dozer, is repaired on the upper floor. The other facilities include a 30 x 40-foot blacksmith shop, a paint room, steam-cleaning room, and full sized basement for storage, which supplements the full square block of outside storage space.

Since Montana law requires bids to be taken for equipment, the division has been unable to standardize its units and has a number of makes of machines on its roster. Despite this, it has little difficulty securing needed parts. In Missoula are equipment distributors, representing practically all manufacturers, who maintain well-stocked parts inventories. All precision work is taken to the proper agency so that the work can be done quickly and economically. Major re boring jobs are usually done in the state shop at Helena where

William B. Keifner is in charge of the entire setup. Aside from these two types of work, all equipment repair is done in the main shop in Missoula.

Even though this shop is on an upper floor in the building, eight or ten pieces of heavy equipment can be serviced there simultaneously. Two large electric overhead cranes operate in the main shop, and a similar one works in the blacksmith shop. Repair equipment available includes Black & Decker valve-grinding units, a 12-inch lathe, a Manly hydraulic press, two drill presses, a set of Blackhawk jacks under 30 tons, a set of stocks and dies, a full line of tools and greasing equipment, and numerous smaller items.

Working these departments are a shop foreman, a welder, a blacksmith, and a force of seven heavy-duty mechanics. One man specializes in engine tuneups. The division is linked to district maintenance sections by a two-way radio system, and as soon as equipment runs into trouble in the field, word is flashed to shop headquarters, and a mechanic heads for the spread with the re-

CMC ROLL-O-HOIST THE MOST VERSATILE MATERIAL ELEVATOR EVER DEVELOPED



Rolls with the Job . . . Works Like a Ladder on Wheels

Available in 13 different models, gas or electric power. Capacities up to 1,000 lbs. at 110 ft. per minute.

Supplied with straight thru loading, wheelbarrow platform or tip-over bucket. Fool-proof safety device stops full load within 2".

SELF SUPPORTING "A-FRAME" ASSEMBLY

Pictured at left, complete with automatic tip-over bucket. Also available with wheel-barrow platform. "A-Frame" assembly can be added to most Roll-O-Hoists in the field.

CMC JOB MIXERS WILL POUR CONCRETE FASTER—SAVE MEN AND MONEY



CMC Job Mixers are the biggest money makers in the mixer field. They are the easiest handled on the job and are perfectly balanced for high speed trailing.

If you want the best with the longest trouble-free performance choose CMC Job Mixers.

$3\frac{1}{2}$ to 16 cubic foot models are available to fit any job condition.

They are built to take it . . . Compact.. Easy to Spot.. Easy to move



$3\frac{1}{2}$ NON-TILT



$3\frac{1}{2}$ TILT

SOLD & SERVICED BY AMERICA'S BEST DISTRIBUTORS

CONSTRUCTION MACHINERY COMPANIES

WATERLOO, IOWA

CONTRACTORS AND ENGINEERS

Preemptive policy in highway division prevents breakdowns by scheduling repairs at the first sign of trouble

placement parts required.

Maintenance Policy

Operating on the policy of preventing breakdowns, mechanics give equipment all the care it requires by replacing items such as fuel and oil filters when necessary, and by promptly repairing equipment at the first sign of mechanical trouble. Crew members work on the theory that if repairs are done thoroughly and completely by an experienced mechanic, the job will pay dividends in productive working time on the line.

This system of preventive maintenance calls for careful advance planning on the part of Margetts and the division. New equipment—aside from snow-removal or truck units—is requisitioned not later than November 1 of each year. A complete list of motor-grader-blade cutting edges and scarifier teeth is in Helena not later than December 27 in preparation for the next construction season. Weed-killing chemicals are ordered in January; traffic paint, by February. Snowplow and rotary augers are ordered before March 29 and snow-fence parts, by May 10.

Margetts works about two months ahead of time on various maintenance operations and keeps in close touch with construction and maintenance engineers to make sure that equipment will be ready for use when it is needed. Repair work on the district's 27 Wausau, Baker, and Bros push and V-type snowplows is done during the summer months. At this time, too, the 4 Klauer Snogos, one a large machine and three of them medium-sized, and the 26 Butler, Bros, Flink, Hydro, and Century power sanders are also checked by the maintenance crew. The 12 Rosco and Littleford distributors of various

sizes, the power brooms, and tank-car heaters and circulators are given attention by the mechanics about two months prior to use.

A never-ending item is repair work on all-year equipment—17 Allis-Chalmers, 2 Galion, and 2 Adams motor graders; the 18 Case, Allis-Chalmers, and International power mowers; the Seaman Pulvi-Mixer; the 17 1½-ton trucks of various makes; 33 trucks in the 2-ton class; 8 trucks in the 2 to 3-ton class; and 6 trucks in the 3 to 4-ton class.

Repair work is carefully recorded so that upkeep files show at a glance just what repairs have been made on individual pieces of equipment. Each unit has a separate loose-leaf maintenance folder. Equipment operators fill out a daily record form which details the unit's fueling, lubrication, repairs. Major repair work is covered in a report made by the mechanic who does the job. Each of these separate reports goes into its proper file. Complete battery records and complete tire records are available for each machine. Since the division recaps tires as often as it can to obtain more mileage, the latter records are consulted again and again.

By keeping its equipment in top-notch repair, the division keeps its 280 units working at an average productive ratio of about 60 per cent of the time each year, helping Montana to keep up with the enormous highway job it has to do.

THE END

Richkraft Opens Mill

A new mill of the Richkraft Co., Chicago, Ill., and its manufacturing affiliate, Simplex Paper Corp., has been opened at Crossett, Ark. The plant will manufacture the full line of Richkraft concrete-curing papers.



The new Model 155 excavator.

Excavating Machine Is Crawler-Mounted

A new ½-cubic-yard crawler-mounted excavating machine is announced by the Harnischfeger Corp., 4603 W. National Ave., Milwaukee 46, Wis. The Model 155 excavator features a simple power-box construction that contains all the driving machinery in a minimum of space. The power box is built of 1-inch-thick steel plate, all-welded into a rigid unit, and is oil-tight. It forms the machine frame and supports all shafts, drums, the engine, the counterweight, and the work attachments. An added advantage reported is unusual accessibility to all working parts.

The Model 155 is convertible as a shovel, hoe, clamshell, dragline, crane, and magnet, with all front-end attachments designed for fast change-over. It is of all-welded construction for maximum strength without excess weight. Car-body and crawler frames are welded integrally with the large-diameter turret and roller-circle path for resistance to shock and strain.

The machine's planetary boom hoist has power lowering to give control for "inching" boom loads. Simplified P&H hydraulic controls are used, and the power source may be either gasoline or diesel.

For further information write to the company, or use the Request Card at page 18. Circle No. 253.

Power Brush Saw

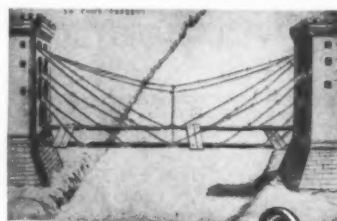
A new brush saw powered with a 2½-hp gasoline engine has been announced by the Williams & Hussey Machine Corp., Milford, N. H.

Among features of this unit are a new type of base which provides a broader footing and eliminates any forward tipping when the machine is set on the ground. The U-shaped assembly which supports the swing arm has a double set of ball bearings.

Standard equipment in this unit is a wire cord belt for even tension drive. A new metallic air filter used will not foul, and the flexible gas line is more accessible.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 291.

Verantius' Pons Ferreus A SUSPENSION BRIDGE DESIGN early seventeenth century



Engineering problems have been growing more and more complex in the past 300 years, and with them has grown the need for greater drafting precision. Since 1662, when the first Staedtler pencils were produced in Nurnberg, Germany, Staedtler has made constant improvements in pencil design and manufacture. Today, the Mars-Lumograph is America's finest imported drawing pencil; in the clutch pencil field the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisp, cleaner prints. Perfectly graded in 19 degrees; EX8B to 9H. \$1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. \$1.50 each—less in quantity.

1904 Mars-Lumograph imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a removable cap which prevents sliding from holder. Available in 18 degrees; EX8 to 9H. \$1.20 per dozen—less in quantity.

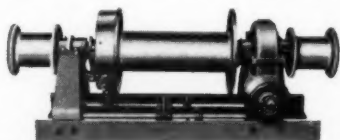


J.S. STAEDTLER, INC.
25 DICAROLIS COURT
HACKENSACK, NEW JERSEY

Why Break your Back?

USE TULSA* WINCH

Drillers, helpers and pushers all agree that Tulsa Winch makes work around the rigs easier, safer and quicker. Whether they are skidding a 500 ton rig or moving a drill bit, Tulsa Winch can handle the job. 28 models for all makes and models of trucks and crawler tractors.



Tulsa* Winch
DIVISION OF
TULSA, OKLAHOMA VICKERS INC.

*Reg. U. S. Pat. Off.



City Highway—Part of the excavation at the Wells Street Plaza bridge approaches and underpass for Chicago's new Congress Street superhighway is handled by a Lorain crane and an International TD-24 crawler tractor with hydraulic dozer. Herlihy Mid-Continent Co., Chicago, Ill., is the contractor.



Double Duty—Fill material, cut from one edge of the road by a Domar elevating grader on a Caterpillar No. 12 motor grader, is placed along the Friant Kern irrigation canal near Visalia, Calif. The special attachment was used to place a total of 38,500 yards of earth along 70 miles of the canal.

Doetsch Brothers, Evanston, Illinois contractors, keep their two HD-9G's busy on a variety of jobs, like their extra-production ability: "The 2-yd HD-9G sometimes will do up to three times as much work as a 1-yd machine. Let's say the smaller unit will load a 10-yd truck in five minutes, roughly — then a 9G will load it in two minutes. Where a 1-yd machine will keep one truck going, a '9' will keep three going."



you can handle **BIGGER** jobs, **TOUGHER** jobs
with this **2-YD** Tractor Shovel



Two Tractor Shovels have cut production costs by bringing greater efficiency to a Midwest rock quarry. These two machines, equipped with standard 2-yd buckets, load rock directly from quarry face to rock crusher, eliminating the need of continually moving the crusher. The speed of the two Tractor Shovels enables the crusher to load out 135 eight-ton trucks a day.

Here's a Tractor Shovel with the handiness of the popular Allis-Chalmers 1-yd unit— but with the power, strength and ability to give more than *double* the working capacity.

The Allis-Chalmers 2-yd HD-9G is just right for the jobs that overload lighter machines. Its husky 72-drawbar-hp engine packs big-job stamina. The heavy-duty, 2-yd bucket is shaped to roll-in material — get a full load with less tractor effort. It lifts loads to a dumping height of 11 ft, 4 in. There's plenty of stability, too, with 29,900 lb of weight and extra long tracks. You'll also find many other proved production-boosting features like: all-steel, box A-frame; 1,000-hour lubrication intervals for truck wheels, idlers and support rollers; simple shift pattern; quick-response hydraulic system; unit construction.

Your Allis-Chalmers dealer has all the facts. Ask him to show you how the big-production HD-9G can improve your operations.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Glass Fiber Reinforces Masonry-Cutting Blade

■ A masonry-cutting blade, reinforced with a special type of fiber glass, is announced by the Construction Machinery Sales Co., 447 Vinton St., Waterloo, Iowa. The Orange break-proof safety blade is reported to have flexibility and strength so that it will not break when twisted.

The new blade comes in three types. Type S-1 is for wet cutting of any hard or dense material. Type S-2 is a general-purpose wet-cutting blade, and will cut almost all materials from concrete products through glazed tile. Type S-3 is an all-purpose dry-cutting blade, which is also suitable for wet cutting of soft materials such as cinder block, light aggregate block, or porous fire brick.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 201.

Air-Entraining Agent

■ A folder on a concrete air-entraining agent is available from the Serviced Products Corp., 6051 W. 65th St., Chicago 38, Ill. The Serviced air-entraining agent, according to the literature, produces more plastic concrete—a mix that can be handled and placed easily, and one that flows freely.

The literature lists the advantages of the air-entraining agent in highway concrete, ready-mix concrete, structural concrete, mass concrete, and a variety of concrete products. It also tells how the additive works and how it is used.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 217.

Vulcan Tools

— FOR —
Rock Drills, Pavement Breakers and Clay Diggers

Vulcan Tool Manufacturing Co.

35-43 Liberty Street, Quincy 69, Mass.
Branch Offices and Warehouse Stock:
57 Leonard St. 34 No. Clinton St.
New York 13, N. Y. Chicago 6, Ill.
Send for catalog or see your local distributor.



Ready for Easter—A Link-Belt Speeder crane makes a substructure pour for the \$1,500,000 Marshall Field & Co. store in Park Forest, Ill. Henning E. Johnson & Sons, Chicago, Ill., used almost 13,000 square feet of Symons plywood forms for the 15-foot-high concrete basement walls.



Big Reach—A 38-B Bucyrus-Erie 1 1/2-yard dragline brings soft dredged river-bottom sand up a 125-foot bank during work on New Jersey's Garden State Parkway. The sloping operation is being done for the Mullica River bridge approach by Robert W. Gaskill, Moorestown, N. J., contractor. A total of 250,000 yards of material was involved in the job.

Connecticut Department Widens Maintenance Plan

The preventive maintenance program of the Connecticut State Highway Department is in full swing, with each of the department's motor vehicles receiving a standard mechanical inspection every 1,500 miles. A permanent staff of experienced mechanics performs this work at 13 automotive service garages.

The program was inaugurated after a departmental study showed potential annual savings of \$200,000 from carefully planned preventive maintenance. The plan is expected to prove particularly valuable during winter storms, when trucks, plows, and other equipment must be ready for immediate emergency service.

Seeking further benefits from the economy program, the department recently sought bids for 13 fuel-consumption analyzers. With these devices, each highway department service garage will be equipped to determine with precision any changes needed in fuel mixture to achieve greater operating economy.

Conveyor-Type Loader Is Self-Powered Unit

■ A booklet describing a self-powered push-loaded conveyor-type loader is available from the C & D Mfg. Co., Perkins, Calif. Job photos illustrate typical applications of the Caterpillar-powered Models C-27 and C-30 Sierra loaders. The booklet highlights such features as one-man operation, blending of bank materials as they are loaded, and other advantages offered on airport, canal, dam, highway, and similar earth-moving projects.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 175.

High lift, Big load capacity, Wheeler speed charge hoppers at lower cost

Bin-batching costs drop fast when mixing plants load hoppers with high-lift, long reach, fast-moving MM Wheeler-Loader units.

Loader attachments, built specifically for 30 hp. RTI and 57 hp. UTIL Minneapolis-Moline Wheelers, reach up to load the highest hoppers, out to fill trucks, cars, conveyors.

With exclusive shuttle speeds and instant reversing, the UTIL combines high rate of travel and hydraulic pump efficiency to make each load-and-dump trip in shortest possible time.

Reserve Wheeler power and greater torque at moderate rpm keeps Wheelers operating in heaviest going. For short, fast maneuvering in congested areas, Minneapolis-Moline offers heavy-duty power steering



at lower cost. For any loading job, call in your Minneapolis-Moline dealer-distributor. Let him demonstrate how you can save money by replacing expensive, less maneuverable equipment with lower-cost time-saving Minneapolis-Moline Wheeler units.



MINNEAPOLIS-MOLINE
Minneapolis 1, Minnesota

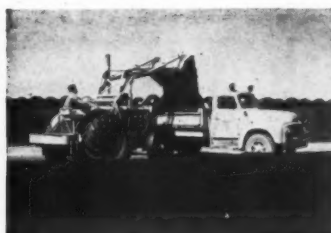
BUILD With the BEST

DESLAURIERS
ROUND COLUMN FORMS
Sturdy • Straight • True
Since 1888—the standard in the construction industry...for lease only or, for lease-and-erection. Diameters: 12" to 56" and larger; any height. Two attractive capitals.

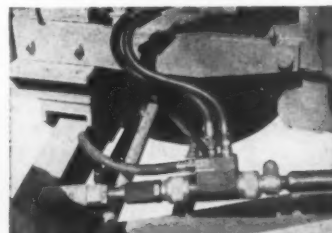
Write Today for FREE Folder or quotation
Deslauriers Column Mold Co., Inc.
9131 Dempster St., Skokie, Ill.
Chicago • Detroit • Oakland



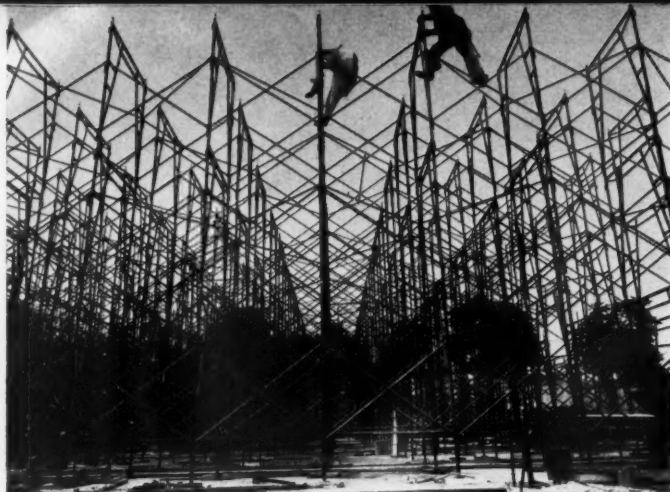
Owner of this St. Paul, Minn., mixing plant replaced two loader outfits with this MM Wheeler-Loader unit, loads bins for less.



Wheeler maneuverability plus good bucket control speeds up surface mixing operations. Shuttle gearing spots loads in half the time.



UTIL Wheelers available with hydraulic POWER-flow steering for maximum operating ease. Built-in safety features insure constant control.



Making Ready—Workmen for the Mellon-Stewart Construction Co., Pittsburgh, Pa., prepare the 112 x 250 x 22½-foot-high Universal Ezebilt rolling scaffold which will support a plywood deck for an 8-inch floor pour on the Western Electric Co. building in Pittsburgh, Pa.



For Heavy Loads—Bored and belled unreinforced concrete foundation footings are constructed by Hughes-Foulkrod Co., Philadelphia, Pa., for a supermarket near Paoli, Pa. A Gar Wood foundation borer on a Gar Wood ¾-yard excavator bored the 37 footings from 8 to 14 feet in depth.

Canada Plans Major Power and Plant Project

Work is expected to start next year on a hydroelectric and industrial project in northern British Columbia and the Yukon Territory in Canada which will harness the area's water resources and provide a total of 4,300,000 hp for the region.

Of the \$269,950,000 to be spent on the first part of the project, \$212,750,000 will go toward developing units to supply 880,000 hp by 1962. The remainder, \$57,200,000, will be spent in construction of smelters and refineries to treat ores and concentrates found in large deposits in the area. These plants will be the first to make use of the low-cost power developed by the Yukon River-Atlin Lake-Taku River Power Project.

The hydroelectric part of the work will develop a storage area which, next to the Great Lakes, will be the largest in the western hemisphere. A system of dams and mountain tunnels will turn the group of large lakes forming the headwaters of the 2,000-mile-long Yukon River into storage reservoirs. Storage will be at 2,200 elevation, and the fall of water through tunnels will generate more than four million horsepower, twice the amount to be developed by the St. Lawrence Seaway Project. The hydroelectric work will be done by Northwest Power Industries Ltd., a subsidiary of Quebec Metallurgical Industries, Inc., and Frobisher, Ltd., a subsidiary of Ventures, Ltd.

Data on Motor Graders And Diesel Engine Line

■ Two booklets—one on motor graders and the other on diesel engines—are available from the Caterpillar Tractor Co., Peoria 8, Ill.

The literature discussing motor graders tells in detail the important points which should be considered before purchasing a motor grader. The other brochure contains job descriptions and photos of some of the applications of torque-converter-equipped diesel engines.

Illustrated are locomotive cranes, excavators, and drill rigs powered by Cat diesel engines which cover power requirements up to 500 hp.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 224.



YOU CAN GET



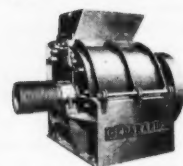
BIG CAPACITY AGGREGATE PRODUCERS



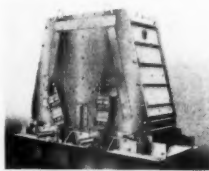
Jaw Crushers, all sizes from 6" x 12" to 32" x 40", for big-volume primary and secondary reduction.



Horizontal Vibrating Screens, 2' x 6' to 4' x 14' single, double and triple deck models, give you biggest volume and most accurate gradation. Also Inclined Screens in all regular sizes.



Three sizes of Hammermills for reduction jobs requiring larger volume of fines.



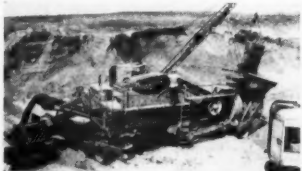
Double Impeller Impact Breakers for big-volume production of cubical shaped aggregate up to 50" feed size.



Junior Tandem portable crushing and screening plant for producing 100 to 150 tons per hour under average conditions.



Super Tandem recommended for big-capacity output in pits with a high percent of fines or contaminated material.



The Commander, big volume producer when specifications call for more smaller sizes of crushed aggregate.



Portable Primary Crushers will convert your gravel plant to big-capacity rock plant. With or without grizzlies.



Single Pass plants for jobs requiring two sizes of material, when extremely accurate gradation is not important.

**Get what you want WHEN YOU WANT IT!
Call Your CEDARAPIDS Distributor First**

Your Cedarapids distributor is all set to supply you with the equipment, complete parts stock and the service to help you with the jobs that won't wait as well as for your day-to-day needs. Check your needs and call him today.



Airport Conduit—Three lines of concrete pipe, 435 feet long and 9 feet in diameter, are laid by Forcum-James, Dyersburg, Tenn., to carry water from Hurricane Creek under a jet-plane taxiway at Memphis, Tenn., Municipal Airport. Laying 333 tons of pipe daily, the contractor did the job in a week.



Cofferdam for Tunnel—A 400-foot-long cofferdam encloses half the Belle Chasse, La., vehicular tunnel being built under the proposed Algiers cut off canal. Later, R. P. Farnsworth Co., New Orleans, La., will pull and redrive the L. B. Foster sheet piling to permit construction of the other half of the \$2,377,000 tunnel.

FAST DELIVERY

from your CEDARAPIDS DISTRIBUTOR

Here are some of the items that you can order now and have delivered very promptly so you can get in on autumn contracts! Each piece of equipment is a big-volume producer that will keep you ahead of schedule at a cost that will be profitable on your low bids. Whether your contract is for producing aggregate, mixing asphaltic concrete or compacting highways or airport subgrades and bases it will pay you to buy the best. Buy Cedarapids and get it first!

Your Cedarapids dealer has all the facts about fast delivery and low cost operation and maintenance. See him today!

LOW MAINTENANCE BITUMINOUS MIXING PLANTS



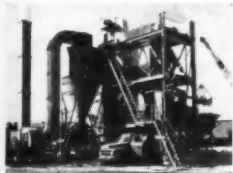
Model CM Commercial Mixer, continuous-mix type plant for your smaller bituminous mixing jobs.



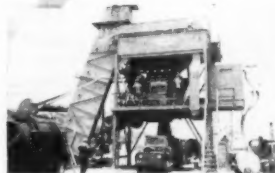
Packaged Drier complete with bucket elevator and Cyclone type dust collector for portable or stationary installations.



Dry Skimmer Type Dust Collector for compact, simplified installation, increased efficiency and low maintenance.



Model E batch-type bituminous mixing plant turns out 4000 lbs. at a batch.



Model G60, the newest batch-type plant, for cutting your mixing costs and producing 3 tons at a batch.



Compactors reduce the cost and time required for compacting roadbed and runway foundation 50% to 90%.

IOWA
MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa, U. S. A.
Gentlemen: Please send literature and further information about:

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| <input type="checkbox"/> Crushers | <input type="checkbox"/> Driers |
| <input type="checkbox"/> Impact Breakers | <input type="checkbox"/> Dust Collectors |
| <input type="checkbox"/> Portable Aggregate Plants | <input type="checkbox"/> Bituminous Mixing Plants |
| <input type="checkbox"/> Compactors | <input type="checkbox"/> Screens |

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Highway Materials Show Set for ARBA Meeting

An exhibit of new and improved materials, supplies, and methods will be held in conjunction with the annual meeting of the American Road Builders' Association in New Orleans, La., January 10 through 13. This, the largest exclusive exhibit of its kind, will be held in the 14,000-square-foot International Hall of the Roosevelt Hotel.

Major portions of the exhibit will be devoted to aggregates, bituminous materials, portland cement, additives for bituminous materials and concrete, aluminum products, traffic markings and paint, chemical stabilizers, weed killers, engineering instruments and drafting equipment, expansion joints, joint fillers and sealers, and guardrails. Also on display will be culverts and drains, wood preservatives, reinforcing materials, aerial survey equipment, explosives, radio and electronic devices, and business machines.

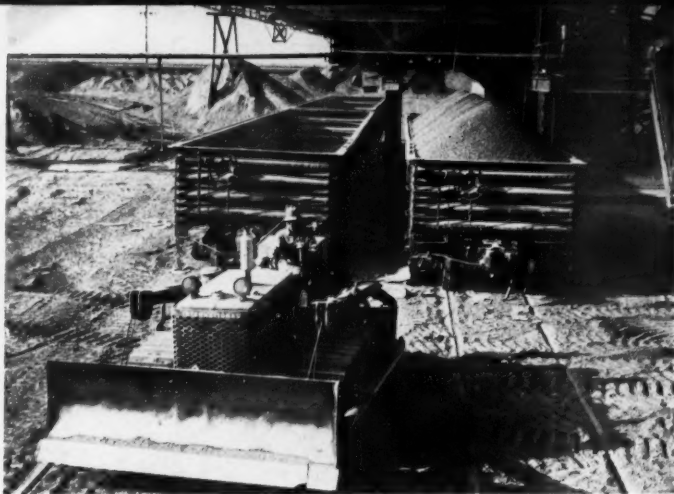
Mathematical Data Book

■ A newly revised loose-leaf pocket manual containing tables and formulas for solving problems in arithmetic, geometry, algebra, trigonometry, analytical geometry, and calculus is available from Lefax Publishers, Sheridan Bldg., Philadelphia 7, Pa. An aid to engineers, technicians, teachers, and students in the civil, mechanical, and electrical engineering fields, the manual contains material arranged in six thumb-indexed sections for instant reference. It covers mathematical reviews, squares, cubes, square roots, cube roots, reciprocals, areas, and circumferences. Five-place logarithms of numbers, logs of trig functions, natural trig functions, and hyperbolic functions are other topics.

This manual is available in a special binder at \$4.25 or in a two-pin cover at \$2.25.

LeTourneau-Westinghouse Names Representative

James T. Barron has been named district sales representative for LeTourneau-Westinghouse Co., Peoria, Ill., in the western and southwestern states, with headquarters in Denver, Colo. He succeeds H. W. Murphy, who has been transferred to the Texas-Oklahoma territory.



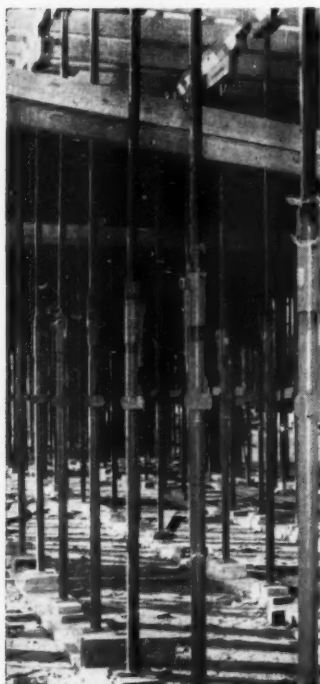
Maintaining Production—An International TD-14A crawler tractor moves a railroad car loaded with crushed stone from the bin to a siding at F. M. Reeves & Sons, Inc., Pecos, Texas. Two International UD-24 diesels operate the plant; one powers a Symonds 4-foot cone primary crusher, the other a Symonds secondary 4-foot crusher.



Pan American Display—Today's earthmoving equipment makes a focal point of Aula Magan Auditorium in Caracas, Venezuela, as more than 250 engineers, road builders, and public works officials from 19 Central and South American nations and the U. S. meet for the 6th Pan-American Road Congress.

Hamilton Wright Photo

SAVES DAYS WITH WACO ALL-STEEL SHORES



Contractor: Smith Construction Co.
Job Site: New Haven, Connecticut

Exclusive New Waco SPEEDSET Adjusts in Seconds!

Test Waco all-steel Shores against others on the same job... like the Smith Construction Company did in New Haven... and you'll see for yourself how Waco saves days and dollars! That's because Waco Shores are faster to set up, faster to take down and faster to handle from start to finish.

Only three shore sizes handle all your shoring jobs. Choice of plate or "J" type head to fit every shoring requirement.

MEMO FROM THE COST ACCOUNTING DEPARTMENT

It's good business to own enough Waco Shores to handle most jobs... then rent extras for unusual requirements. On the average, Waco Shores pay for themselves in less than a year and you're money ahead from then on.

There's no maintenance upkeep or replacement cost on Waco all-steel Shores so the cash you save on equipment rental and man-hours is clear profit.

WACO MANUFACTURING COMPANY

WACO

3569 Wooddale Avenue
Minneapolis 16, Minnesota

Licenses

Waco Manufacturing Co. Los Angeles
Armon Iron Works Windsor, Canada

ASTM Publishes Book On Cement Standards

The 1954 edition of "ASTM Standards on Cement (With Related Information)" is a concise compilation of ASTM test methods, specifications, and definitions. Prepared by ASTM Committee C-1 on Cement, the book discusses 32 standards, as well as chemical and physical test methods. The latter include tests for such things as hydraulic cement, compressive strength, mechanical mixing, and fineness.

Information on analytical balances and weights, a manual of cement testing, and a list of selected references on portland cement are included in the appendices.

The 254-page book may be obtained from headquarters of the American Society for Testing Materials, 1916 Race St., Philadelphia, Pa., at \$2.75 per copy.

Thruway Guide Available

A new handbook of information about the New York State Thruway, designed for the benefit of the vacationist and the business motorist, is

available from the New York Good Roads Association. Entitled "Thruway User's Guide", the booklet contains notes on points of interest, vacation spots, restaurants, and hotels along the thruway route. Safety hints on how to drive on an express highway, as well as details on the proper interchange or exit to use in order to reach a destination, are included.

The guide may be obtained by writing to the New York Good Roads Association, 116 Washington Ave., Albany, N.Y.

Literature on Excavator

■ Literature on its new ¾-yard Model 250, a combination shovel, dragline, clamshell, crane, hoe, and pile driver, is now available from Osgood-General, P. O. Box 515, Marion, Ohio.

The booklet covers superstructure and crawler dimensions and widths. It also describes the machine's capabilities and includes working-range and lifting-capacity charts.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 182.

HENSLEY MAKES ROAD BUILDING EASIER..

When the going is TOUGH!



LIGHTWEIGHT HEAVY DUTY RIPPER. Fits all small, medium and large dozers. Penetration 8" to 18". Excellent tool where grade has been lost, and for corner cuts.



REMOVABLE DOZER RIPPERS. When used in sets of three to five units, they give you coverage the width of blade for ripping hardpan, concrete, blacktop, red rock and other hard surfaces.

And there's no need for a separate rig for each job — not when you use double utility Hensley Equipment!

See Hensley at work... and SAVE!

...and HENSLEY Heavy Duty Grouters, Shot, Bolt, Track Rollers, Dozer Brush Rakes, Scraper Rippers, Scarifier Shanks and Teeth, Overlay End Bits, and Hitch Blocks!

HEAVY DUTY ROCK END BITS for D-4, D-7 and D-8 dozers. Designed for lasting wear and penetration

CASH IN ON THIS GREAT NEW NAME IN HEAVY DUTY CONSTRUCTION EQUIPMENT — Write Now for Dealership information. Your territory may be open!

HENSLEY EQUIPMENT COMPANY
TRADE MARK
5141 15th Avenue • Oakland 5, California



THIS Versatile Coupling

while used primarily for air-operated tools in field and factory, is equally efficient for water, oil and spray service. Illustration shows hose end and female I.P.T. end connected.

"AIR KING"
QUICK ACTING UNIVERSAL
HOSE COUPLING

Heads are locked by pressing together and giving quarter-turn. These locking heads are identical for all sizes of hose or threaded ends, permitting the coupling of any two sizes of hose, or hose and pipe, within the "AIR KING" size range. Equipped with patented safety locking device. Bronze or rustproof malleable iron, in sizes up to 1".



Two Hose Ends Connected

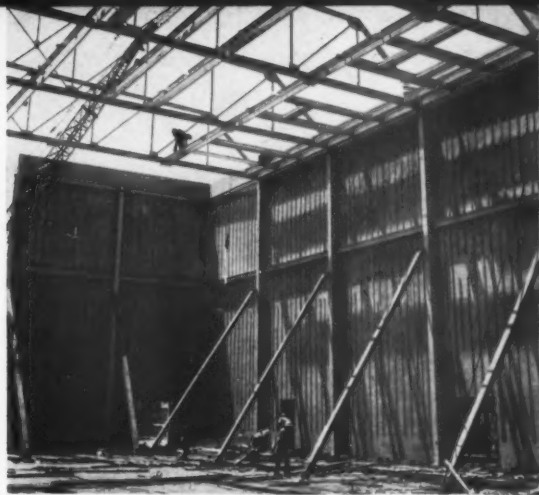
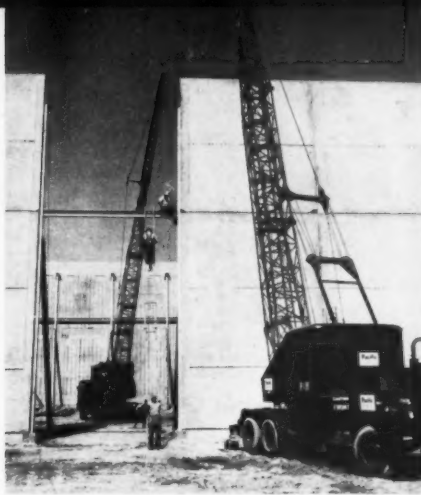
Male I.P.T. End

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.

GENERAL OFFICES & FACTORY — PHILADELPHIA 22, PA.
BRANCHES — CHICAGO • BIRMINGHAM • LOS ANGELES • HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies.
Ruck Iron Company Inc., Quakertown, Pa. • Precision Steel Sheet Company, Camden, N.J.

CONTRACTORS AND ENGINEERS



Four Day Job—As wall erection starts on NBC's 60,000-square-foot color TV studio in Burbank, Calif., one of the 84 precast panels for the 90 x 140 x 50-foot-high structure is lifted into place by a P&H crane by means of plates welded to reinforcing steel. At center, two tiers of panels forming the 46-foot-high walls of the studio are in place.

Panels weigh from 20 to 35 tons each and are 20 feet wide; those forming the lower portion of the wall are 27 feet high. At right, walls are completed and a Koehring crane erects steel for the roof. The Austin Co., Cleveland, Ohio, designer and builder, started work on May 1, and expects to be finished early next month.

Hydroelectric Planning Is Treated in New Book

A book on designing and preparing plans for hydroelectric power installations, "Hydro Power Engineering", has been published by The Ronald Press Co., 15 E. 26th St., New York 10, N. Y. Though practical rather than theoretical in approach, the book provides fundamental theory, then deals with the design of water passages, the proper number of units, and the structure itself. Chapters cover such subjects as water-power development, hydraulic turbines, hydro-steam association, and the economic aspects of hydroelectric development.

Designed mainly as a text, the book was written by James J. Doland, professor of hydraulic engineering, University of Illinois. The book is priced at \$7.50 and can be ordered from the publisher.

Data on Tractor Loaders

■ A folder on its Domor loaders for Caterpillar D2 and D4 tractors has been released by the Ulrich products Corp., Roanoke, Ill.

The Domor D2 and D4 loaders feature full track oscillation, extra-high lift, and quick detachability. They are offered with buckets in a wide range of sizes.

Descriptions and specifications are included in the folder.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 263.

**Miller
SWIVEL**

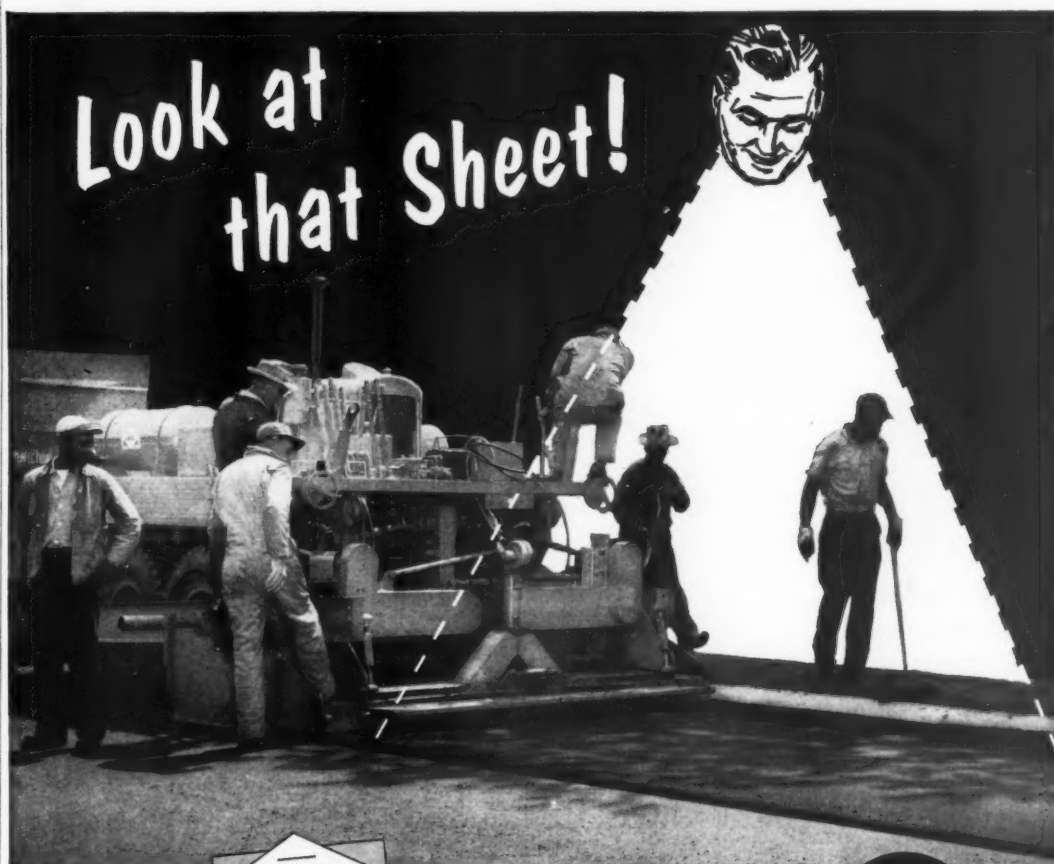
"HEADACHE BALLS"

Overhauling weights for single lines (62#-450#). Attached to Miller Ball Bearing Swivel for perfect load lifting control. Compact for extra head room. 7 models. 5 tons to 20 tons capacity.

Let us work with you to adapt Miller Swivels to your particular needs. Write for Catalog and Prices



GENERAL MACHINE and WELDING WORKS, Inc.
P. O. BOX 938, POMONA, CALIFORNIA



...it's a **BLAW-KNOX** Bituminous Paver

on wheels

● Look at that sheet! Look at the edge! A smooth course, free from ripples. A firm, even edge easy to lay up to for a tight, firm joint. That is the result of the long Blaw-Knox wheel base and the accurate control made possible by Blaw-Knox hydraulic steering.

The Blaw-Knox brings you the simplicity of wheel mounting. It frees you from the complications, the upkeep and the oversteering characteristic of crawlers. Wheel design makes for good results with faster travel and cuts time loss in moving either on the job or in getting to new jobs. Wheels mean a better job, *faster*.

The check list at the side lists only a small part of the advantages of this advanced bituminous paver. Ask for the Greentree story and more details.

BLAW-KNOX COMPANY

Foot Construction Equipment Division
1916 STATE STREET NUNDA, NEW YORK

- ✓ Long wheel base and wheel steering assure greater accuracy and smoother course.
- ✓ Eliminates the 500 to 600 parts characteristic of crawlers.
- ✓ Tires absorb vibration, reduce chatter in screed and reduce wear and tear on machine.
- ✓ Leveling principle equalizes ordinary subgrade irregularities.
- ✓ Dual controls—operate machine from either side.
- ✓ Compacts to uniform density and automatically measures and levels.
- ✓ Handles hexcar trucks on grades with ease.
- ✓ Works close to curb.
- ✓ Conversion for increased width is easy and fast.
- ✓ Simple, easy crown adjustment.

On wheels
it will pave
for less



The new Windsor concrete-cutting machine.

New Concrete Cutter

■ A new machine for cutting concrete pavement has just been announced by the Windsor Machinery Corp., 61 Airport Road, Hartford, Conn. Powered by a 26.8-hp engine, this machine uses the Windsor diamond blades in diameter sizes of 12 to 22 inches.

A cooling and flushing system removes loose abrasives in the cut by carrying water down to both sides of the blade through twin steel tubes, then jetting it into the blade collar. Through centrifugal action, the water is then picked up and forced through slanted holes, spaced at 1/4-inch intervals, onto the blade and into the cut.

Other features of the Windsor concrete cutter are depth-of-cut control, the welded metal frame, a heavy-duty front shaft, a hydraulic system which balances the machine's 1,000-pound weight for easy maneuverability, semipneumatic tires, a 6-volt self-starting battery, and a front pointer or guide.

For further information write to the company, or use the Request Card at page 18. Circle No. 271.

Abrasive Saw Blades That Fit Most Tools

■ Abrasive saw blades with universal bushings which enable them to be used on most of the popular makes of portable tools, bench and stand grinders, and flexible shafts with a guard, were recently introduced by the Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago 7, Ill. Available in masonry and general-purpose types, the Handee abrasive saw blades come in two sizes, 7 and 8 inches in diameter.

The universal bushing eliminates the necessity of buying special blades to fit specific tools.

For further information write to the company, or use the Request Card at page 18. Circle No. 190.

Electric Equipment for Construction Machinery

■ A new bulletin on electric equipment for heavy-construction machinery is available from the General Electric Co., Schenectady 5, N. Y.

Bulletin GEA-6195 contains case histories of various electrified construction-tool applications for dam construction. The principles of construction-machine electrification reported can be applied by all contractors.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 290.

Fireproofing Method For Concrete Flooring

■ A new method of fireproofing a Cofar concrete floor has successfully passed an Underwriters' Laboratories fire rating test, according to a report from the Granco Steel Products Co., Granite City, Ill. Cofar is a corrugated steel sheet which serves both as a form for concrete and as reinforcement.

The method consists of applying vermiculite acoustical plastic directly to the underside of sheets of Cofar. Vermiculite, an expanded mica, is used as a lightweight aggregate in

the acoustical plastic.

For further information write to the company, or use the Request Card at page 18. Circle No. 292.

All-State Appoints Lutz

The newly appointed general sales manager for All-State Welding Alloys Co., Inc., White Plains, N. Y., is Kenneth V. Lutz. In addition to directing sales and service to users and distributors of All-State alloys and fluxes, Mr. Lutz will serve as an advisor to regional managers on problems of welding, brazing, soldering, cutting, and tinning.

Le Roi-CLEVELAND Sinkers — with their strong rotation, powerful blow, fast drilling speed, and easy holding, have what it takes to drill more feet per shift. Shown is the 18-lb. H-22 in a stone quarry. Le Roi-CLEVELAND Sinkers sizes range from 18 to 80 lbs.



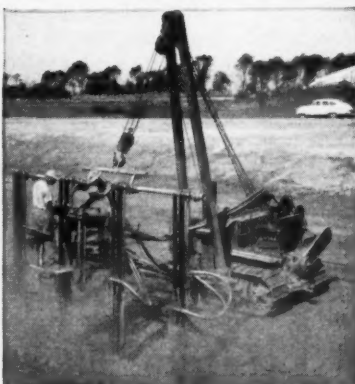
Le Roi-CLEVELAND DR-30 Wagon Drill — Air-powered by a 600-Airmaster, this wagon drill puts deep holes down faster, with less air than any other wagon drill available. Its 4-inch bore, Le Roi-CLEVELAND Drifter has strong rotation, powerful hole-cleaning ability and high drilling speed with big bits. For shallow holes, the lightweight Le Roi-CLEVELAND DR-34 is available.



Le Roi-CLEVELAND Paving Breakers — really pack a wallop. They are available in sizes from 18 to 80 lbs. Their powerful force of blow is ideally suited for the toughest concrete. This feature, plus easy handling, makes them a favorite with operators who like to get a lot of work done. A protective air cushion in the front end keeps maintenance costs to a minimum.



Le Roi-CLEVELAND SB30 Pipeline Rig — This adjustable, multiple drill rig, consisting of four, 4-inch, air-feed drifters hung from a side-boom tractor, was pioneered and developed by Le Roi-CLEVELAND for trenching in hard rock. Because of its flexibility and drilling power this rig is also ideal for cutting costs on road jobs or wherever you have big rock cuts. On this road job in Pennsylvania the SB30 drilled 275-300 feet per hour.



Le Roi Air Power helps

beef up your profits



LE ROI GIVES YOU MORE FOR YOUR MONEY!

More air power!
More footage!
More profits!

New Earthmover Tire Mounts on Wide Rim

■ A low-pressure earthmover-type tire of new design has been developed by the Goodyear Tire & Rubber Co., Akron 16, Ohio. Constructed for a wider rim than present earthmover tires, the new unit is known as the Wide Base Earth Mover.

The new tire is made at present in only two sizes: 29.5 x 25 and 29.5 x 29. These replace the company's 24.00 x 25 and 24.00 x 29 sizes, respectively. It is mounted on a rim 25 inches wide, in contrast to the



A set of the new Goodyear earthmover-type tires that mount on a rim 25 inches wide gives improved flotation to this Euclid scraper.

17-inch rim used for the sizes replaced. The tire is available in both the Earth Mover Sure Grip and Hard Rock Lug tread designs.

For further information write to the company, or use the Request Card at page 18. Circle No. 254.

Plastic Air Hose For Pneumatic Tools

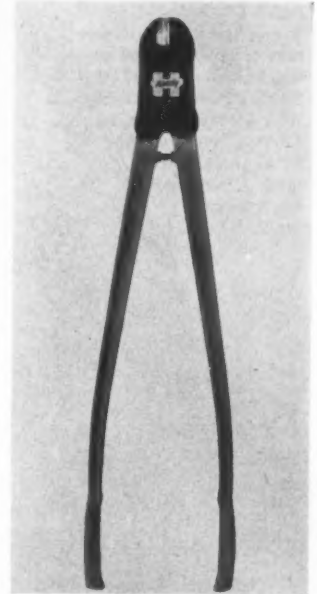
■ A lightweight plastic air hose for pneumatic tools is offered by the Boston Woven Hose & Rubber Co., P. O. Box 1071, Boston 3, Mass. The flexible Bostrene air hose weighs only 8.8 pounds per 100 feet in the 1/4-inch-diameter size, and is also offered in a 3/8-inch diameter for working pressures up to 120 pounds at 75 degrees F.

The light weight of the hose allows the use of pneumatic tools in place of heavier electric tools. The use of line oilers on the hose saves manual lubrication.

For further information write to the company, or use the Request Card at page 18. Circle No. 268.

Reinforcing-Rod Cutter

■ A tool for cutting concrete reinforcing rod, hard bolts, chain, and high-strength steel strand and guy wire is offered by the Interstate Drop Forge Co., 4051 N. 27th St., Milwaukee, Wis. Increased leverage, the use of new alloys, and special heat treatment have improved this



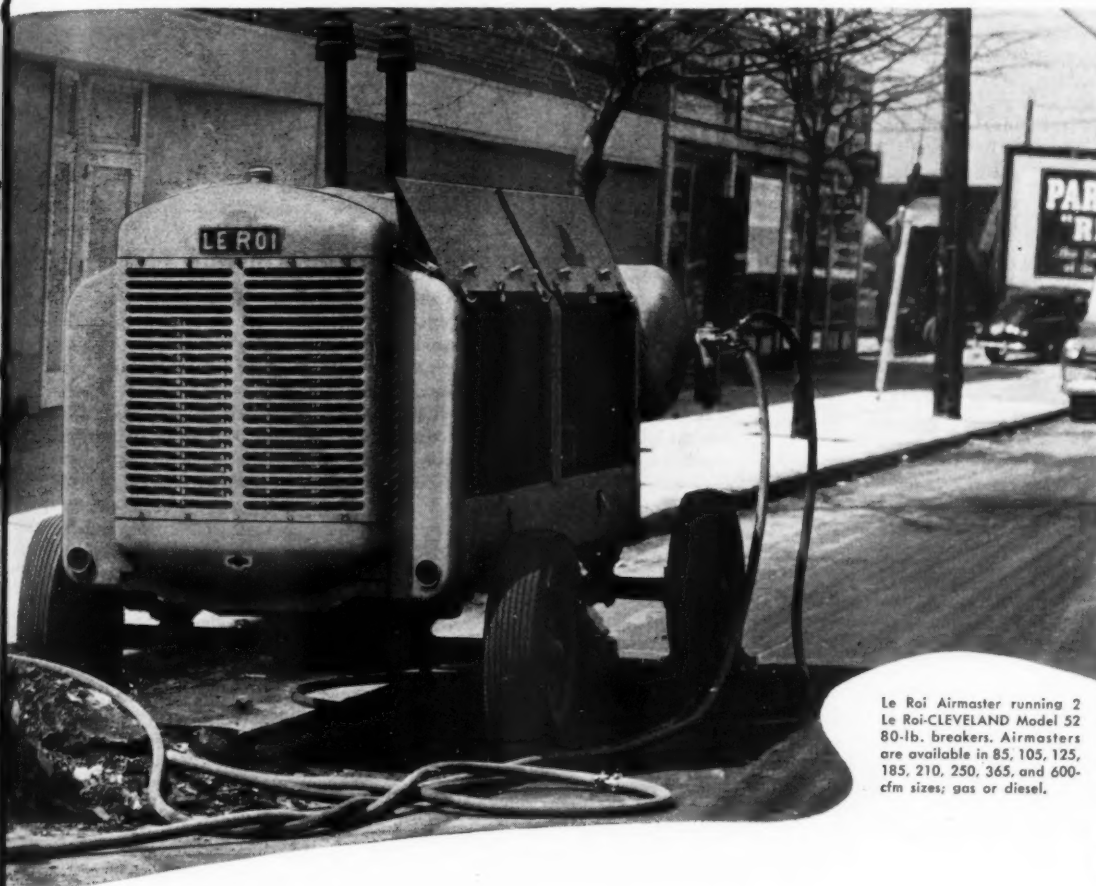
model with no appreciable increase in weight over earlier types. The handle was designed after the varying grips and stances of operators were studied.

The hardy cutters are available in capacities up to 9/16 inch in diameter.

For further information write to the company, or use the Request Card at page 18. Circle No. 276.

Curtis Is New Executive At United Concrete Pipe

The newly appointed vice president in charge of engineering for United Concrete Pipe Corp., Baldwin Park, Calif., is George L. Curtis, who has been chief engineer of the firm. He joined United in 1946 after wartime service with the U.S. Navy's Civil Engineering Corps.



Le Roi Airmaster running 2 Le Roi-CLEVELAND Model 52 80-lb. breakers. Airmasters are available in 85, 105, 125, 185, 210, 250, 365, and 600-cfm sizes; gas or diesel.

...that's why it pays you to use Le Roi Airmaster Compressors and Le Roi-CLEVELAND Air Tools

YOU'VE probably said to yourself, "What equipment do I need to meet competitive bidding — how am I going to improve my profit picture?"

Well, Le Roi has the answer, when it comes to your power needs. We build the widest range of portable air compressor sizes and models available. You have 8 sizes and 14 models to choose from. You can pick the machine exactly suited to your job requirements — the machine that does the most work at the least cost to you.

And so that you can get the most out of the high

efficiency that's designed and built into every Le Roi Airmaster, we recommend the use of Le Roi-CLEVELAND Air Tools. These tools — sinkers, breakers, drifters, tampers, wagon drills, spades — all have their own exclusive valve design. That's why they are easy to hold, why they have the right kind of blow, why they squeeze the most out of Le Roi air power, why they get more work done.

Yes, Le Roi can help you beef up your profits. Find out for yourself what Le Roi can do for you. See your Le Roi distributor or write us.



LE ROI COMPANY

MILWAUKEE 14,
WISCONSIN

A Subsidiary of Westinghouse Air Brake Co.

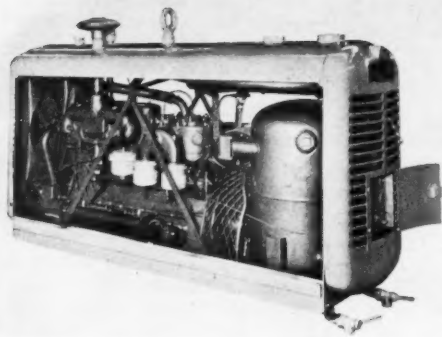
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6-113



The Le Roi 105-cfm Utility air compressor is available again, with new features including better air cleaning and cooling.

Improved Compressor for Truck Mounting

■ After an absence of several years, the 105-cfm utility compressor has been returned to the Le Roi Air-master line. The new version has several improved features, including

better air cleaning and cooling through the use of oil-bath air cleaners and a pressurized cooling system.

The same basic engine is used as in the Le Roi 105 portable compressor. However, it is contained under one housing and includes an upright air receiver. This space-conserving feature makes the utility model suitable for mounting cross-wise behind a truck cab. Over-all width of the unit is 25 inches, and the over-all length is 82 inches.

For further information write to the Le Roi Co., 1706 S. 68th St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 230.

A list of coming conventions appears on page 111 of this issue.

4 LEBUS BINDERS HOLDING 158,000 lbs.

Pictured is a portion of a 158,000 pound vessel being transported by the Musselwhite Trucking and Rig Building Company. Shown here are two of the four LEBUS LOAD BINDERS used to hold this load... further proof that truckers depend on LeBus Load Binders for STRENGTH, SAFETY and REAL HOLDING POWER when transporting valued loads. Make it a safe load... bind it with LeBus Load Binders!



LEBUS
**LEBUS ROTARY
TOOL WORKS, inc.**
Phone Plaza 9-2771
P. O. BOX 2352 • LONGVIEW, TEXAS

Forms for rebuilding damaged pier caps are erected by workmen on the MacArthur Bridge spanning the Mississippi near Burlington, Iowa. Repairs, done from a floating barge by Western Waterproofing Co., St. Louis, Mo., did not interfere with vehicular traffic using the span.



Waterproofing Restores Concrete Bridge Piers

All restoration work on the concrete channel piers of the MacArthur Bridge across the Mississippi River at Burlington, Iowa, was done from a floating barge by Western Waterproofing Co., St. Louis, Mo., so that traffic flow on the span was uninterrupted. The piers, structural steel encased in concrete, had been

damaged by water absorption, followed by alternate freezing and thawing. And the reinforcing had rusted, causing the concrete to spall and chip.

The first step in the restoration process was to cut all damaged concrete out of the piers, and to remove the disintegrating pier caps. The areas to be repaired were then completely cleaned, reinforced, and refilled with gun-applied cement. Old pier caps were replaced with caps designed by Ned Ashton, bridge engineer. New welded mesh reinforcing steel was anchored, and forms were erected for rebuilding the caps. Then all the exposed areas were given the final protection of two coats of Western's Resto-Crete. The job was under the direction of Harry Staff, Commissioner of Streets and Public Improvements, Burlington.

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practical pointers...

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Now you can choose from two different lines of Berger Instruments, the type that best fits your day-to-day surveying needs—from the simplest home and road building job to the most exacting first-order surveying projects. For now, Berger makes both moderate-priced Builders and Contractors Instruments and its world-famous Engi-

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For Exacting Assignments...Highways, Dams, Bridges... the Berger Engineers' Transit. Horizontal circle has double opposite verniers reading to minutes, 30 seconds or 20 seconds; verniers are offset to line of sight and provided with reflectors. Protected vertical circle has double vernier. Graduations on Sterling Silver. Erecting-internal focusing telescope. Smooth-acting leveling and tangent screws; level vials readily visible. Large bearing areas on centers and clamps. "R" type equipped with compass, yoke standard and wye bearings.

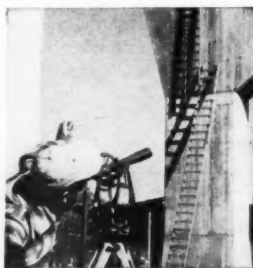
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"How to operate excavation equipment"

New book just published covers proper operation and control of all types of equipment including shovels, tractors, graders, rollers and other machinery.

This book saves time and money in training new personnel, and provides handy tips which mean less down time.

Circle number 500 on the bound-in Red Request Card for more details on "How to operate excavation equipment", plus handy order form.

**Contractors and
Engineers**
magazine of modern construction
470 Fourth Avenue, New York 16, N. Y.

CONTRACTORS AND ENGINEERS

New Self-Powered Compactor Designed With Rolls Constructed of Staggered Steel Segments



The four large-diameter rolls on the new Buffalo-Springfield Model K-45 Kompactor are made up of welded steel segments. According to the manufacturer, these segments enter the loose material with a minimum of displacement.

■ The newest Buffalo-Springfield compaction roller has four large-diameter rolls, made of heavy welded steel segments placed in staggered rows around each roll. According to the manufacturer, the Model K-45 Kompactor works more efficiently because the segments which form the rolling surfaces enter the loose material with minimum lateral or longitudinal displacement, and leave without disturbing the compacted areas. In this way, all compaction effort is downward, resulting in greater and more uniform densities.

The new compaction machine—self-propelled, reversible, and easy to maneuver on steep embankments—can work close to abutments and

culverts. Engineering features incorporated into the new unit include automotive hydraulic booster-type steering; 4-wheel air-over-hydraulic brakes; three-stage torque-converter drive; a two-range full-reversing transmission; and a torque proportioning bevel-gear-type differential.

Specifications for the roller are: gross weight, 32,000 pounds; wheel-base, 13 feet 10 inches; over-all length, 20 feet 7 inches; width, 8 feet 9½ inches; and height, less exhaust stack, 6 feet. The engine is a 110-hp industrial diesel unit.

For further information write to the Buffalo-Springfield Roller Co., 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 312.

Masonry Coating Has Synthetic Rubber Base

■ A masonry coating with Goodyear Pliolite S-5 synthetic rubber-based resin is the most recent addition to the line of the Preco Chemical Corp., 84 County Court House Road, New Hyde Park, N. Y.

Marketed as Plotone, this chemically inert coating is recommended

as a finish for surfaces such as concrete, stucco, asbestos shingle, brick, etc. It is reported to be durable, resistant to water and chemical attack, non-oxidizing, and mildew-resistant.

For further information write to the company, or use the Request Card at page 18. Circle No. 270.

HERE'S THE NEW White



TROWELER
WITH
EXCLUSIVE
RETRACTABLE
WHEEL*

Model T-1
White troweler,
36" ring. *Patent
No. 2,621,568.

WHEEL UP TO TROWEL—Blade pitch control and safety throttle on handle. Blades stop and engine idles if operator lets go of machine. Blade pitch adjustable during rotation.

WHEEL DOWN TO MOVE—One man easily wheels White troweler from slab to slab or to truck—an exclusive White feature.

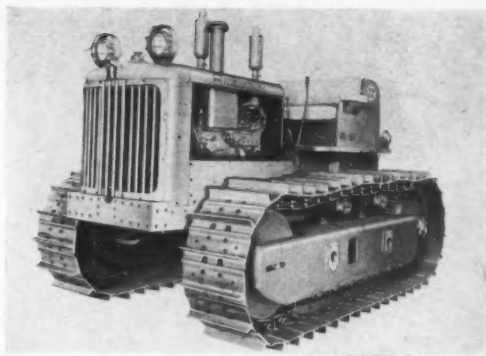
TEN SECONDS—To remove ring and wheel machine through narrow doorway; or to clean or change blades.

SIXTY SECONDS—To completely disassemble power unit, ring, blades and handle.

SEE IT... TRY IT... COMPARE IT!

Write for full information and name of nearest dealer.

WHITE MANUFACTURING COMPANY, ELKHART 9, IND.



THE NEW torque-converter model of

the International TD-24 crawler tractor is a 200-net-hp machine. With the use of the torque converter, speed and power are increased by merely advancing the throttle. Most gear shifting is unnecessary. The model has the same dimensions as the standard TD-24, and all attachments are interchangeable. For further information write to the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 283.

WELLMAN "Williams" MULTIPLE ROPE BUCKETS

Designed for digging bigger payloads



THE double main hinge design of these WELLMAN "Williams" buckets gives you many advantages including: lower head room when boom or crane operations are cramped; stronger, more compact construction; and a really "long reach".

These tough, top-quality buckets are fast operating and give the operator perfect control at all times.

If it's a WELLMAN—it's built to dig and last while digging.

THE WELLMAN ENGINEERING CO.
CLEVELAND 4, OHIO

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The Wellman Engineering Company
7030 Central Avenue, Cleveland 4, Ohio

Please send me bulletin on:

☐ Clamshell Buckets
☐ Dragline Buckets

☐ Stone Grabs
☐ Log Grabs

Your Name _____

Address _____

City _____ State _____

Position _____ Company _____



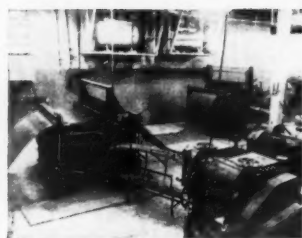
Heavy-Duty Wheel Tractor—The Garrett All-Drive four-wheel-drive tractor is a factory-approved conversion of an International TD-6. It is in the 30-drawbar-hp class and can travel 8 mph. Weighing 13,060 pounds with winch, bulldozer, and canopy, the tractor has the pulling power needed for heavy-construction work. For details circle 233 on card at page 18, or write to Garrett Distributors, Enumclaw, Wash.



Versatile Backfiller—An improved model of the Hopper conveyor, a machine for back-filling trenches and for road widening, is announced. The conveyor assembly is removable so that the hopper can also be used for spreading. The conveyor, used separately, handles bulk materials. For details circle 237 on card at page 18, or write to the Power-Pack Conveyor Co., 13910 Aspinwall Ave., Cleveland 10, Ohio.

THREE GOOD WAYS

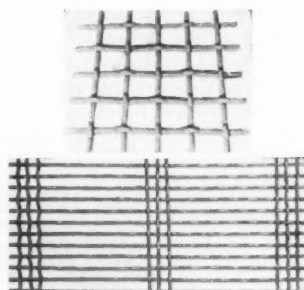
TO CUT YOUR MAINTENANCE COSTS



USE IOWEAVE SCREEN CLOTH

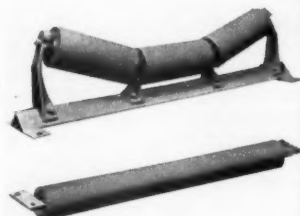
Ioweave is made by Cedarapids from a special analysis, oil tempered wire that will withstand fatigue and wear against abrasion. This high quality wire makes it possible to use a lighter gauge for a given size of opening, thus greatly increasing the tonnage output.

Ioweave is available in a wide range of sizes and weaves to fit your needs. Write for Bulletin CS-4.



USE CEDARAPIDS CONVEYOR EQUIPMENT

The automatic machine shown here turns out a complete conveyor idler every 28 seconds with permanently sealed, oil lubricated, heavy duty, single row, self-aligning ball bearings which eliminate the need for field lubrication. Heavy gauge steel tubing rolls insure perfect and constant balance. Cedarapids conveyor troughing roll assemblies and return idlers are available in widths from 14" to 48". Write for Bulletin CON-1.



USE CEDARAPIDS MOTORIZED HEAD PULLEYS

You can cut your conveyor maintenance costs 70% to 90% by installing Cedarapids Motorized Head Pulleys. All the drive mechanism is contained inside the pulley shell so there are no chains, sprockets or sheaves out in the weather and dirt, no chain idlers to keep adjusted and oiled, no V-belts to adjust or replace, no shafts and drives to service and lubricate. Modernize your conveyors now with Motorized Head Pulleys. Write for Bulletin MP-1.



ALL ITEMS ALSO AVAILABLE FOR ORIGINAL EQUIPMENT MANUFACTURERS

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

The Cedarapids Line also includes: Portable and stationary crushing, screening and washing plants for stone, gravel and sand. Vibrator and revolving screens. Feeders. Hammermills. Double impeller impact breakers. Batch type and continuous mix type bituminous mixing plants. Driers. Dust Collectors. Vibrating soil compaction units.

Concrete-Cutting Blade

A new concrete-sawing blade is announced by the Clyde Co., P. O. Box 72, Racine, Wis. The manufacturer reports that in Clyde Duo-Bond blades, the diamond bond is fortified to provide an extremely hard cutting edge to resist abrasion and wear.

Another feature is that the blades are built to provide a sufficiently wide cut for easy application of all types of joint sealers. The blades are now offered in a 12-inch diameter to fit any make of concrete-sawing machine.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 288.

Wheel-Type Trencher With Crawler Mounting

The recently-announced Cleveland Model 240 crawler-mounted wheel-type trencher that digs up to 36 inches wide and to 6 feet 3 inches deep is described in a folder from the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio. A feature of this model is that it is easily portable and does not require special permits for job-to-job hauling.

A side-view photo shows the locations of the features described in the literature. The bulletin also contains a table of the unit's 48 available digging-wheel and crawler-speed combinations. These provide more than 33 digging speeds which range from .5 to 37.3 feet per minute.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 255.

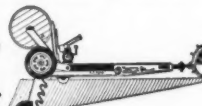
Lay Cables

(Telephone & Electric)

at low cost

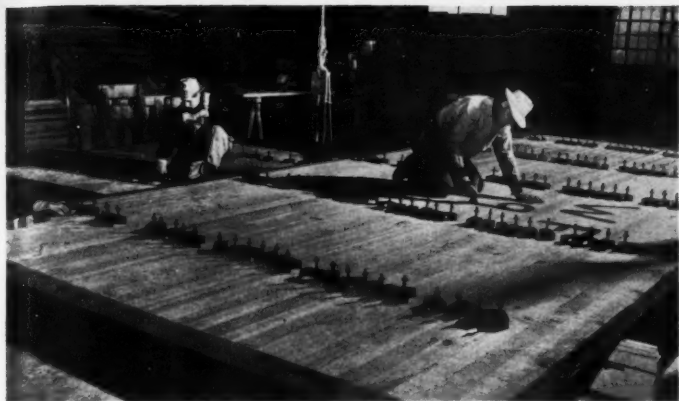
120-150 FEET PER MINUTE

USE
Ryan Wire
and
Cable Layer



Pulled by a Caterpillar Tractor

Write for details
F. B. RYAN • Chariton, Iowa



Massive Concrete Forms—These unusual wooden panels were made by Timber Structures, Inc., for use on The Dalles Dam across the Columbia River in Oregon. The panels, with extremely smooth surfaces, will be used as forms for placing concrete in the main spillway. For details circle 239 on card at page 18, or write to Timber Structures, Inc., N. W. 29th and Yeon Ave., Portland 8, Ore.



Trail Blazer—The new LeTourneau Sno-Buggy travels over deep snow and, under certain conditions, pulls cargo trailers across snow, swampland, or loose sand. Eight tires, 10 feet high and 4 feet wide, are mounted on four electric wheels, each of which has its own built-in electric motor and gear system. For details circle 236 on card at page 18, or write to R. G. LeTourneau, Inc., Longview, Texas

Data on Bonding Additive For Hot Asphalt Paving

■ Literature is available on a new asphalt bonding additive which is not destroyed when used in asphalt road materials at high temperatures. The new product, Pave, made by the Carlisle Chemical Works, Inc., Reading, Ohio, now makes it possible to have the advantages of a bonding additive in asphalt cement and hot mixes.

The additive is reported to be equally effective with asphalt cements, cutbacks, emulsions, and invert emulsions. It acts to give a stronger bond to the paving, to prevent water creep between the asphalt and aggregate, and to reduce peeling.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 206.

Data on Timber Connectors

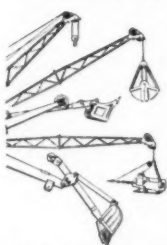
■ A new booklet tells where and how to install five types of timber connectors which are used to increase the strength of joints in a wide variety of light and heavy timber structures. The booklet is issued by the Timber Engineering Co., 1319 18th St. N. W., Washington 6, D. C.

The Teco connectors include wedge-fit split rings used in trussed rafters and heavier timber roof trusses, shear plates for joining wood to steel, and for demountable wood-to-wood connections, toothed rings, spike grids, and clamping plates.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 193.

(Advertisement)

Consider Future Needs When Buying An Excavator



The machine a contractor buys today as a shovel, he might need as a crane tomorrow... or as a dragline, clamshell, or hoe. Because the contractor knows that under today's narrow margin conditions, it takes specialized equipment to handle profitably the

job at hand. Because of these changing needs and because equipment investment must be kept to a minimum, it is wise in buying an excavator to get one that is truly and easily convertible in the full sense of the word, not just one on which different booms can be hung.

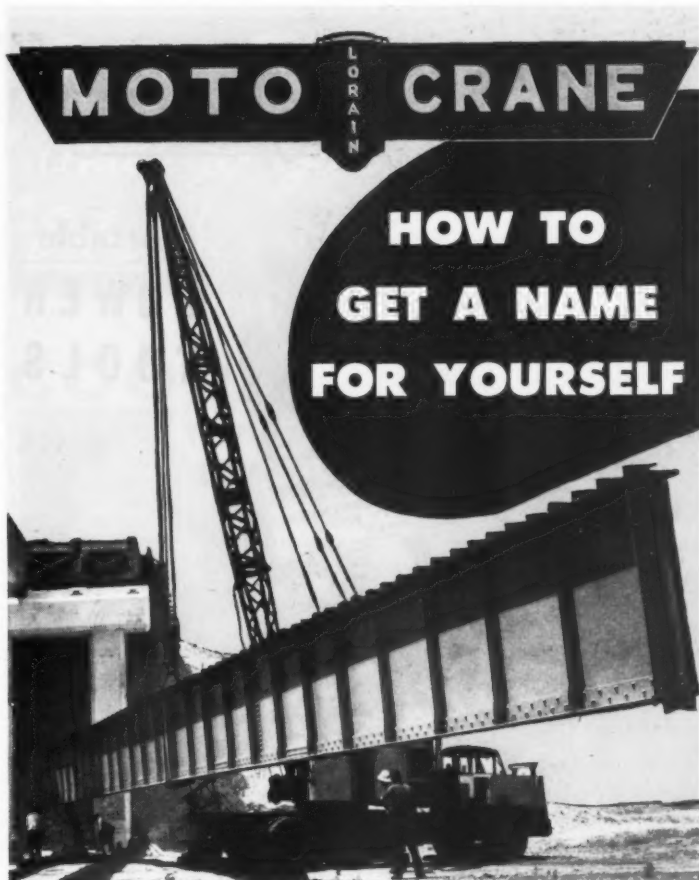
For example, a machine might be entirely acceptable as a shovel as originally built, but one day it is changed over to a crane by simply putting on a crane boom. That makes it look like a crane, anyway. But as a crane, it might have little stability over the sides, thereby severely reducing its lifting capacity for full circle operation, no precision boom lowering device for careful, precise boom control on steel erection, no power load lowering for inching down heavy loads. Possibly drum sizes cannot be changed with convenient lagging to vary line speeds and cable winding as needed. There may be no gantry for easy derricking of long booms, no boom harness and pendants to reduce reeving time when changing boom lengths. In other words, it isn't a crane that can be used as an efficient, money-making tool. It still is just a shovel with a crane boom hung on it.

Maybe the next job calls for a dragline. Well, hang on a dragline bucket and you're in business—or are you? What about a fairlead properly designed to work smoothly and efficiently to provide minimum drag-in cable friction and wear—and a “convertible” dragline boom head to provide large, centralized diameter sheave for longer cable life and to prevent off-center loads on the boom. How about lagging in diameter to put more pull on the drag-in; and more speed on the “hoist.” And how about “nosing-in” of the crawler. The proper length crawler can make or break a dragline job.

And so it goes for all the front ends. Each is designed to do a different job. And when used for those jobs most profitably, they should incorporate the features needed for the specific job at hand.

A truly convertible machine can be a wonderful investment for a contractor—can fit any job the contractor might do—today, next month or 10 years from now.

New business opportunities don't pass by the contractor who is prepared now to take advantage of any job that comes along—who has lower costs because of lower equipment investment—and who, when he gets on the job, has the proper equipment to fill the need—at the highest profit to him.



The above name plate, which in itself, costs only pennies, is the most valuable thing you can buy on a rubber-tire crane... and it's a name that can build up your name among your customers for reliable, satisfactory results. It identifies a Lorain Moto-Crane*—made by the company that, in 1918, originated the truck crane idea. It represents the most number of years of experience in building rubber-tire carriers to withstand the “live loads” created by shovel-crane use. It represents the greatest selection available in rubber-tire excavators in 7 different capacities from 6 to 45 tons, plus many choices in drives, engines and front ends. It represents the continual advancements in design that make the Moto-Crane* still the last word in rubber-tire cranes. You need never “take a chance” when buying this type of equipment, because the name “Moto-Crane*” on a rubber-tire crane is your assurance of a “profit-maker” whatever your needs. Regardless of the capacity for your job or the price you want to pay, check with your Thew Lorain Distributor on the Moto-Crane.*

THE THEW SHOVEL CO., LORAIN, OHIO

*A registered trademark of THE THEW SHOVEL CO

REMEMBER—IT ISN'T A
MOTO-CRANE* UNLESS
IT'S BUILT BY ...

THEW
LORAIN.

DECALS for

CONCRETE LINE CONSTRUCTION CO. INC.
ELECTRICAL CONTRACTORS

TRUCK DOORS

FOREIGN BROTHERS
GENERAL CONTRACTORS

FINEST QUALITY
PERSONALIZED DESIGN
10 DAY DELIVERY

STORER DECAL CO.
1558 SO. MARKET
WICHITA, KANSAS

FOR SKETCHES AND SAMPLES WRITE TO...

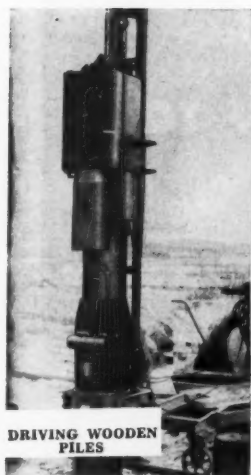


Long-Load Cab—This new 50-inch-wide centered cab, available for four and six-wheel International trucks, permits balanced carrying of long lengths within legal width limits. The one-man cab leaves space on both sides for objects up to 21 inches wide. For details circle 238 on card at page 18, or write to the International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.



Block-Handling Truck Body—This Fontaine Auto-Load hydraulic body mounted on a Reo tandem chassis, operates horizontally and vertically to load and haul bricks and concrete blocks. For details on the special body circle No. 231 on card at page 18, or write to the Fontaine Truck Equipment Co., Inc., 1232 N. 37th Place, Birmingham 1, Ala. For data on Reo trucks circle No. 232, or write Reo Motors, Inc., Lansing 20, Mich.

You Keep Job Costs Down... with **SYNTRON**



DRIVING WOODEN PILES



COMPACTING CONCRETE ON HEAVY FORM WORK

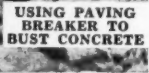


UP-DRILLING IN CONCRETE FOR ELECTRICAL OUTLETS

Portable POWER TOOLS



END TRIMMING OF JOISTS



USING PAVING BREAKER TO BUST CONCRETE

"Self-Rotating" ELECTRIC HAMMER DRILLS



Eliminate slow, laborious hand-turning of drill chuck. Speeds drilling in concrete and masonry—with less effort.

ELECTRIC SAWS with Dual V-Belt Drive



Fast, easy cutting of wood, concrete block, plaster board, etc.

Specifically built for heavy duty, industrial use, Syntron Power Tools keep job costs down on countless construction and maintenance projects. Designed for continuous operation on the toughest commercial jobs. Rugged, high speed tools that require very little maintenance.

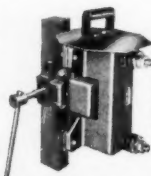
Gasoline Hammer ROCK DRILLS and PAVING BREAKERS

Completely self-contained. Drill — dig — cut — tamp with 2000 powerful blows per minute. Automatic rotation of drill bit.



CONCRETE VIBRATORS

Mass and Form types for uniform compacting and settling concrete.



Write today for complete tool catalog—FREE

SYNTRON COMPANY

227 Lexington Ave.

Homer City, Pa.

New Copying Machine

■ A table-top model direct-reproduction machine has been introduced by the Charles Bruning Co., Inc., 4700 Montrose Ave., Chicago 41, Ill. The Copyflex Series 100 model, which makes positive copies directly from the original of anything drawn, written, printed, or typed, has an operating speed of twelve feet per minute and a printing width of eleven inches.

The self-contained copying unit works by the diazo direct copying process. It does not require any exhaust ducts, darkroom facilities, special lighting, or plumbing.

For further information write to the company, or use the Request Card at page 18. Circle No. 247.

Bituminous Distributors

■ A bulletin describing its line of bituminous distributors is announced by the Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn. The line includes both front and rear-mounted models, in capacities rang-

ing from 800 to 4,000 gallons.

Nozzle valves on the distributors are gang-controlled from the operator's platform. A single-lever master control valve is used for pressure metering the application.

The equipment can be used for loading, transferring, spraying, and circulating. Pressure is automatically maintained in application.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 222.

Scaffolding Booklet Describes Lock Features

■ Literature showing the operation of its Speedlock scaffold-assembly lock has been issued by the Waco Mfg. Co., 3555 Wooddale Ave., Minneapolis 16, Minn. Included in the bulletin is literature on Waco's sectional scaffolding, rolling towers, hoisting towers, all-steel shores, mason's jacks, scaffold jacks, and swing stages.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 176.



THE BOMBARDIER MUSKEG TRACTOR FOR TRACTION,

FLOTATION and UNSURPASSED PERFORMANCE

Dual tracks 29" wide on each side give this vehicle a bearing area of approximately 6,200 square inches or a ground pressure of $\frac{3}{4}$ -lbs. per square inch.

Extremely mobile and easily maneuvered, it will operate on terrain inaccessible to any other known mode of land transport.

Designed and engineered to perform in all seasons and under the roughest conditions.

Write for full particulars

BOMBARDIER SNOWMOBILE LIMITED
Valcourt, Que., Canada



New Excavator-Crane—The new Koehring Model 405 excavator with a 20-ton-lift capacity has only two major shafts in the upper machinery. These are used for all applications. The crawler-mounted unit is available with five attachments, including a shovel and a hoe with 1-cubic-yard-capacity buckets. For details circle 235 on card at page 18, or write to the Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis.



Medium-Capacity Windrow Loader—The new Barber-Greene Model 550 windrow loader, which is mounted on a Model 50 John Deere tractor, has a capacity of four cubic yards per minute. A special power-feed loading mechanism, and a turning radius of only 8 feet 6 inches, are features. For details circle 234 on card at page 18, or write to the Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

Corrugated Metal Pipe For Drainage Construction

■ A new folder issued by Armco Drainage & Metal Products, Inc., 703 Curtis St., Middletown, Ohio, features comparisons of average bids for the construction of drainage structures of both corrugated metal pipe and concrete pipe.

The booklet also lists the advantages of using Armco corrugated metal pipe, pipe arch, end sections, Multi-Plate pipe, Multi-Plate pipe arch, Multi-Plate arch, and perforated Hel-Cor pipe. Charts and tables list size and gage ranges.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 223.

Line on Measuring Rules

■ Literature illustrating an improved line of folding rules is available from the Eagle Rule Mfg. Corp., 510 Hunts Point Ave., New York 59, N. Y. The Eagle rules, featuring a coil spring in each joint, can reportedly take the wear of continu-

ous opening and closing better than other types of rule.

The rules, which are printed in white for easy reading, are available in a variety of models in lengths from 4 to 8 feet.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 205.

Bulletins on Excavators

■ Two bulletins covering both crawler and wheel-mounted $\frac{3}{4}$ -yard excavators are announced by the Schield Bantam Co., Waverly, Iowa. The first bulletin contains shovel specifications, capacities, and information about optional shovel equipment, such as an electric dipper trip and rehandling buckets for the Model T-35 6-ton truck-mounted unit. A second bulletin offers information on the Model C-35 crawler-mounted shovel-crane.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 264.

Save time and trouble with the

New LUFKIN

WHITE-CLAD

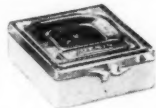
MEZURALL TAPE RULE

with decimal markings



• New Extra-Strong "Magic Metal" Featherweight Case

- Upper edge marked in 10ths and 100ths of feet; lower edge marked in inches to 16ths.
- New snow-white line with jet black markings tested and proven most durable.
- Self-adjusting end hook for accurate butt-end and hook-over measurements.
- Available in 6 foot (W926D) and 8 foot (W928D) lengths.
- Packed in free "See Thru" re-usable box with hinged lid and snap fastener.



BUY **LUFKIN** TAPES • RULES • PRECISION TOOLS
FROM YOUR SUPPLY STORE

THE LUFKIN RULE CO., SAGINAW, MICHIGAN

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*Belting That's
Built to Give
Extra Service!*



GOODALL

"SUPER TRIPLE-S"

Conveyor Belting at its best... for super-severe service. Built to handle crushed stone up to 10" and other highly abrasive bulk materials, wet or dry, particularly on long center hauls where tension is high and extreme flexibility is required. Weather-resistant cover. Tensile strength, friction and other details determined by specific requirements.



GOODALL "Triple-S"

Designed for severe service but where weight of bulk material and length of carry do not demand "Super-S" quality. Recommended for crushed stone up to 6" or 8", abrasive ores, etc.



GOODALL "LaCrosse"

A perfectly balanced, quality belt for all but the most severe conditions. Used for handling sand, gravel, shells, ashes, etc.



Above—"Wear King" Mucker Belts. Developed especially for use on Conway Mucking Shovels in tunnel excavating, and employed on most of the largest modern tunnel jobs.

Left—"76" Grader Belts. For many years, the Contractor's best assurance of long, trouble-free service on heavy-duty Elevator Road Graders.

Contact Our Nearest Branch For Catalog, Details, Prices



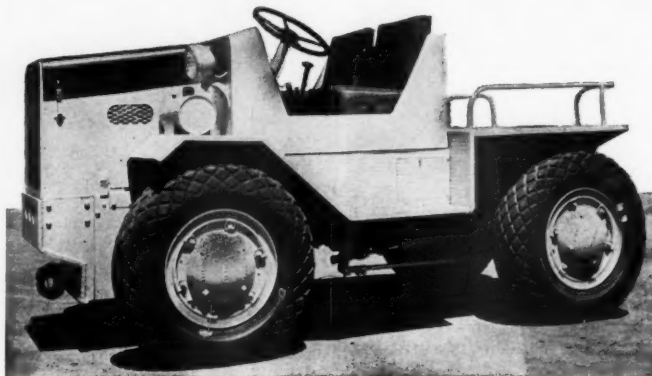
GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches: Philadelphia • New York • Boston • Pittsburgh • Indianapolis • Chicago • Detroit • St. Paul
Los Angeles • San Francisco • Seattle • Spokane • Portland • Salt Lake City • Denver
Houston • Goodall Rubber Company of Canada, Ltd., Toronto • Distributors in Other Principal Cities

■ A new series of four-wheel-drive tractors is available in models rated at 65 to 150 hp and having a drawbar pull of 5,000 to 30,000 pounds. Top speeds range from 15 to 80 mph. The Series 40 Coleman tractor, made by the American-Coleman Co., Littleton, Colo., may be ordered with a gross vehicle weight of 6,000 to 30,000 pounds on a wheelbase of 90 inches and up. Tread widths are from 62½ to 85 inches. The power source may be a diesel, gasoline, or LP gas engine.

The manufacturer emphasizes that the weight of the all-wheel-drive vehicle is properly balanced between the front and rear axles to provide higher traction for the weight of the unit than can be obtained from a single-axle-drive tractor. Under tests, one model of the Series 40 tractor is reported to

New Series of All-Wheel-Drive Tractor Offers High-Speed Units In Wide Power Range



One of American-Coleman's new all-wheel-drive tractors.

have developed a drawbar pull equal to 92.4 per cent of its gross weight. Efficient use of power is claimed for the vehicle even on grades of more than 65 degrees. Maneuverability and simplicity of design are other features reported.

The tractor may be obtained with or without a torque converter, and it is offered with a 3, 4, or 5-speed transmission. Steering may be 2-wheel, 4-wheel coordinated steering, 4-wheel steer with independent rear-wheel steer, or 4-wheel selective steering that allows the operator to choose from a number of combinations.

For further information write to the company, or use the Request Card at page 18. Circle No. 258.

Line of Equipment For Handling Liquids

■ A folder describing a line of liquid-handling equipment is offered by George D. Ellis & Sons, Inc., American and Luzerne Sts., Philadelphia 40, Pa. Bulletin No. 63 describes Ellisco endurance-type, side-pour type, and oval-type delivery cans.

Also covered are two types of electrically welded measuring buckets, as well as ten types of galvanized-steel heavy-duty funnels of varying sizes, shapes, and capacities. Special equipment illustrated includes the Seraphin test measure, heavy tin-plate measures, snap-on can and faucet tags, safety tank-truck filling stems, sampling cans, deep seamless boxes for asphalt tests, and brush-top cans.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 295.

Booklet on Concrete Pipe For Water-Pressure Lines

■ A new booklet describes concrete pipe used for water lines and tells how it is made and installed. A catalog section lists and illustrates types of Price concrete pressure pipe offered for water transmission, subaqueous intakes and outfalls, and sewage force mains.

The Price prestressed concrete steel-cylinder pipe is made with a thick core of concrete and steel, around which a high-tensile steel wire is wrapped under tension. The entire pipe is then protected with a coating of cement mortar.

To obtain this literature write to Price Brothers Co., 1932 E. Monument Ave., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 174.

Catalog on Concrete Forms Includes Selection Guide

■ Concrete forms, form ties, and accessories are illustrated in a new catalog from the Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago, Ill. A quick-reference concrete-form tie-selection guide helps contractors choose the proper tie to meet working load specifications.

Another feature of the catalog is a form-design chart and formula for developing stud, wale, and tie spacing. Reinforcing-bar supports and road dowel-bar supports are also included in the catalog.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 274.



Eimco 105's with excavator attachments dig in forward motion and discharge overhead to the rear. Standard models will load ordinary trucks, high discharge models will easily load high railroad gondolas.

Loading with Eimcos is fast — from stock pile it's easy to load at the rate of 400 yards an hour. Digging unbroken material such as conglomerate or hard clay will net 1000 to 1200 yards per 8 hour day average.

Operating a 105 is easy, even for untrained personnel. Convenient handles are pushed for forward motion, pulled for reverse. There are no complicated gear shifts, clutches, brakes, etc., for the operator to manipulate.

It pays to use haulage equipment to its maximum rated capacity — an Eimco will load it full, quickly, efficiently.

Let us show you an Eimco in action! Write for more information.

THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.
Export Office: Times Bldg., 22 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala.
Duluth, Minn. Kalamazoo, Mich. London, Eng. Paris, France Milan, Italy



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Request Cards
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Primary Blast-Hole Drill Is Dual-Purpose Unit

■ The new primary blast-hole drill for both rotary and percussion drilling recently announced by Ingersoll-Rand, 11 Broadway, New York 4, N. Y., is described in a booklet from the manufacturer.

The bulletin tells the story of the dual-purpose Model QM-2 Quarry-master drill as a percussion drill, stressing its features for use in hard or abrasive rock. Two additional pages do the same thing for

the unit as a rotary drill. Also included are job pictures, dimensions and specifications, and a list of available accessories.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 185.

Folder on Air Compressor

■ An air compressor that delivers 55 to 60 cfm of air at working pressures up to 100 pounds is described in literature from the P. K. Lindsay Co., 97 Tileston St., Everett 49, Mass.

The Lindsay Model 55 air compressor is powered by an air-cooled 20-hp 4-cylinder Wisconsin VF4D engine, and is capable of operating heavy breakers and light rock drills.

Other features are stellite exhaust valves, an adjustable speed governor, automatic unloading with engine slow-down, and electric starting. Two-wheel and skid-mounted models are available.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 308.

Bulletin on Steel Trusses

■ Long-span and standard trusses produced by the Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh 25, Pa., are the subject of a new bulletin. The literature includes drawings of a variety of trusses, as well as illustrations of buildings using pitched, bowstring, long-span, flat, cantilever, or saw-tooth trusses.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 306.

There is a GM Diesel Engine Distributor Near You

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ARMSTRONG EQUIPMENT CO.

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MORRISSEY BROTHERS TRACTOR CO.

MICHIGAN—Detroit 4, Grand Rapids
THE EARLE EQUIPMENT CO.
Iron River
DROTT TRACTOR CO., INC.

MINNESOTA—St. Paul, Duluth
BORCHERT-INGERSOLL, INC.

MISSISSIPPI—Jackson
TAYLOR MACHINE WORKS

MISSOURI—North Kansas City
K. C. DIESEL POWER COMPANY

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New York 54
GRIFFIN EQUIPMENT CORP.

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E. F. CRAVEN COMPANY

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RAY C. CALL COMPANY

WASHINGTON—Seattle 9
EVANS ENGINE & EQUIPMENT CO., INC.

Seattle 4, Anchorage, Fairbanks
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MODERN MACHINERY CO., INC.

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DROTT TRACTOR CO., INC.

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THE COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

GM DIESEL
CASE HISTORY NO. 5312-118

USER: Macco Corporation,
Paramount, California.

INSTALLATION: GM Diesel-powered Ingersoll-Rand and Chicago Pneumatic rotary compressors supply air for Guniting river-banks and earthquake-damaged building walls.

PERFORMANCE: Macco has standardized on GM Diesel-powered rotary compressors. Charles D. Dutro, Superintendent of Guniting Construction, reports steadier air, more positive pressure, gets 25% more work done than with other compressors. No repairs since units were installed more than a year ago.



It pays to STANDARDIZE on

... available in more than 750 models of equipment built by over 150 manufacturers



"25% more work done"

with GM Diesel-powered Rotary Compressors

25% more work done per shift—steadier, more positive pressure—high portability—these are some of the reasons why Macco Corporation has standardized on General Motors Diesel-powered rotary compressors for their Guniting work. They report smoother operation and faster, easier moves.

Quick-acting GM 2-cycle Diesels pack more power in less space, so for building jobs Macco mounts the compressors on light trucks for faster trips. In intermittent compressor operation—and in every other kind

of work—precision unit fuel injectors keep fuel consumption down. Contractors tell us that GM Diesels run for years without overhaul, but when parts and service are needed they are always quickly available.

More and more contractors are standardizing on modern rotary compressors designed around quick-accelerating GM 2-cycle Diesel engines. For more details on GM Diesel-powered compressors for your job, call your nearest distributor or write:

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines 30 to 300 H.P. Multiple Units Up to 893 H.P.

PORTRAIT IN PRINT

Jobs With a Challenge Inspire Minnesota Contractor

By RALPH MONSON, Field Editor

JIM RICHARDS is a young man who is definitely of the old school. He rises early and works hard and late. He looks for the tough jobs instead of taking the easy ones. He enjoys tackling a job which is different or difficult and making it produce a profit.

Jim's "old school" thinking stems from his early associations with men whose names are well known in the construction industry. Among these are Jim's father, M. W. Richards; E. W. Hallett, president of Hallett

Construction Co., Inc., Crosby, Minn.; J. A. Henderson, president of United Construction Co., Winona, Minn.; J. A. Woodhall, vice president of Central States Construction, Inc., Crosby; V. R. Wood; and others with whom he has worked during the past 25 years.

M. W. Richards was for many years associated with E. W. Hallett in a series of construction and material-producing enterprises. It was only natural that young James, at the age of 14, preferred being a

water boy on one of his dad's jobs to any other summer work. That was the beginning of his construction experience.

After graduating from Shattuck Military Academy at Faribault, Minn., Jim worked a year before entering the School of Mines of the University of Minnesota. He was graduated from the university in 1935 with the degree E. M. While his work has been almost entirely in construction since leaving school, he still has an interest in mining and

never passes up an opportunity to investigate a mineral source which might have commercial possibilities.

While he was attending the university, Jim met Marion Sanders of Detroit Lakes, Minn., who was also a student. Casual acquaintanceship blossomed into romance, and in 1936 Marion became Mrs. Richards. Within a few years two sons, James F., Jr., and Fred S., joined the household.

Out of school, Richards plunged into full-time work with United



James F. Richards, vice president of the New London Materials & Construction Co., Willmar, Minn., is a contractor who works right with his crews. Here he checks plans in the field office.

C&E Staff Photo



DON'T LET OLD MAN WINTER SLIP UP ON YOU!

..... GET REAL CONTROL OF ICE CONTROL!
PUT HI-WAY SPREADING EQUIPMENT TO WORK



HERE'S THE "DUO POWER" MODEL E—THE NEW LEADER IN MATERIAL SPREADERS GIVES YOU:

- A metered spread
- Adjustable width of spread 3' to 70'
- Forward or reverse spreading without shifting
- Cab controlled operation
- Spreading at speeds up to 35 MPH
- Conveyor output controlled by positive truck drive shaft drive
- Distributor Disc driven hydraulically
- Accurate spreading of salt, sand, cinders, calcium chloride

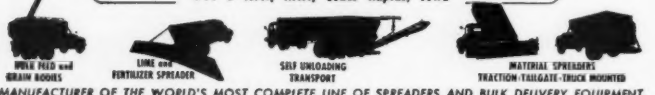
Get more information on the complete New Leader line of spreaders. There's a size for every need as well as gas engine or power take off driven models.



HI-WAY MODEL DD—an all-season, low-cost portable tail gate spreader mounts on standard dump body, powered by rugged gas engine.

HIGHWAY EQUIPMENT CO. Inc.

641 D Ave., N.W., Cedar Rapids, Iowa



MANUFACTURER OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS AND BULK DELIVERY EQUIPMENT.



DESIGN



ROCKFORD CLUTCHES provide the advantages of heat-treated, hardened and ground steels — flat, non-grab facings — heat dissipation — dirt exclusion — and fine adjustments. These wear-resisting, life-lengthening clutch features are essential to designs that must be projected with a thought to uses of tomorrow. ROCKFORD engineers now are working with many companies on their future designs — to provide custom-engineered clutches for long range economy. Their services are available to you.

Send for This Handy Bulletin

Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.



ROCKFORD CLUTCH DIVISION
BORG-WARNER

314 Catherine Street, Rockford, Illinois

ROCKFORD CLUTCHES

CONTRACTORS AND ENGINEERS

Construction Co. on a series of projects on the upper Mississippi 9-foot-channel program. With his eagerness to learn more about construction, the experience gained during summer vacations, and the guidance and counsel of his father and other men, Jim soon worked himself up through the ranks to positions of responsibility.

Receives Navy Citation

During World War II, Jim found himself in the middle of a highly organized union labor situation when the company undertook the construction of a dry dock at the Boston Navy Yard. Local "experts" doubted that these fellows "from the sticks" would ever be able to build anything under Boston labor conditions. However, United had promised the Navy that it would complete a dry



Mr. and Mrs. Richards, pictured with their two sons in the family home at Edina, Minn., enjoy many outdoor activities with James Jr., left, and Fred in the lake country of northern Minnesota.

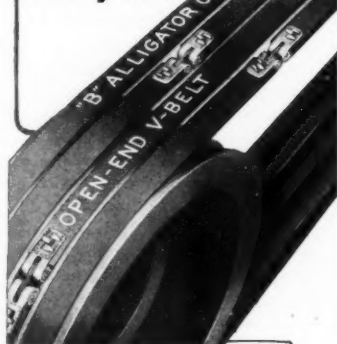
C&E Staff Photo

Most mornings, the crew traveled by tractor or horse-drawn wagon to the site, returning the five muddy miles to camp at dusk. During or after rains, the trails were impassable even for tractors or horses. On these days, the men busied themselves playing cards and speculating about tomorrow's weather. There was one very small town about 28 miles from the job, but the nearest city was 60 miles away—and 20 miles of that distance was just a trail through the swampy wilderness. In spite of all handicaps, however, the job was completed on schedule and at a profit.

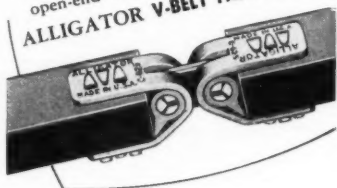
On another job in the north country, wild animals provided one of the major problems. These were not man-eating wolves or huge bears, but seemingly harmless little

(Continued on next page)

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If the correct size of endless V-Belt is not readily available, or if you have to tear down machinery to install, then the best belt to use is open-end V-Belt fastened with ALLIGATOR V-BELT FASTENERS



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**ALLIGATOR
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dock in four months less time than was allowed in the schedule set up by the Bureau of Yards and Docks, and the company proceeded to keep this promise.

Since the common labor supplied by the Boston local turned out to be largely of Italian descent, United hired foremen who could speak both Italian and English, although even this arrangement had its shortcomings. Picking up another group of workmen, the contractor got the job in full swing. Completion was actually nine months ahead of the Navy's schedule. For this accomplishment, Navy authorities awarded the company and the crew special citations. Jim Richards was assistant superintendent for United on this project.

Jim's interest in doing the unusual type of job led to the formation in 1948 of the construction division of the New London Materials & Construction Co., Willmar, Minn. Richards is vice president and part owner of the company, and is the moving force behind its construction activities. He bids his own jobs, then takes a crew out into the field.

Works in Wilderness

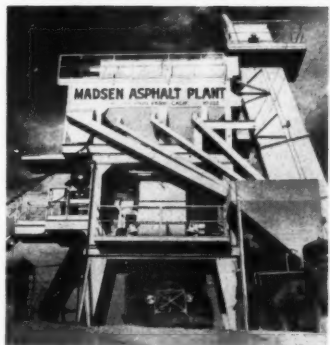
One of the early jobs handled by

the firm was the construction of an underwater dam of brush mats and riprap near the outlet of Red Lake in northern Minnesota. The site was a bog in the midst of wilderness country which was part of a large Indian reservation. The closest road was 20 miles away. Bids were received in February, a time when deep snow and the lack of roads made the place next to inaccessible. Undaunted, Jim made his way to the site, inspected the conditions, and submitted the low bid. It was later disclosed that he was the only bidder who had been able to visit the site.

During the winter, while frost made the ground hard enough to support trucks, his crews scoured the surrounding countryside gathering field stone for the riprap. Dozers rooted out the stones from piles which had been thrown up at the time the land was cleared. Trucks hauled to the job site over the frozen muskeg, which in summer would not support any vehicle. When spring came, Jim and five of his key men set up camp in an abandoned trapper's cabin 5 miles from the job. They hired a crew of Indians and lived there in the wilderness until the job was completed.

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ADDRESS.....

muskrats. The project was the construction of a cofferdam for the Minnesota Department of Conservation at McIntosh, Minn. A portion of the cofferdam was formed of steel sheathing, but the remainder of the job was inaccessible for placing and driving sheathing, so an earth fill was substituted.

No sooner would the crew have a substantial part of the earth dike in place than muskrats would burrow in, looking for a new winter home. Water would flow through the tunnels and wash out the cofferdam. Before the job could be completed, Richards and his crew had to engage in a supplementary project of trapping and shooting the muskrats until they were eliminated.

Mississippi River Projects

More recently, Jim's firm has en-

gaged in a series of projects centering about Lock and Dam No. 1 on the Mississippi River at Minneapolis, Minn. (see "Falling Rock a Hazard on Crib Wall Job", C. & E., Sept., 1953, pg. 38).

An earlier job at this location had entailed the removal and repair of a portion of a guide wall below the locks. The footings had been undermined and the wall had tipped over. For the repair work, it was necessary to construct a cofferdam across the lower mouth of the locks from an island in the river to the mainland. Jim first built a dike, using the very coarse gravel and rock of which the island was composed. It was impossible to drive steel sheathing through this material.

To make this porous gravel dike into a watertight barrier, Jim dumped clay on the upstream side

so the passage of water through the gravel would carry the clay into the dike. Gradually the spaces between the gravel particles were plugged by the clay, and the cofferdam was prepared for unwatering.

This project was being constructed during the winter, with a completion date of March 31 and a heavy penalty impending for failure to finish on schedule. In fact, if the job had not been finished by the time the river was opened to navigation in the spring, it could not have been completed until the following winter. Waiting over this long period would have spelled financial disaster for the young company.

Success or failure of the venture—and with it the life or death of the company—depended on this cofferdam keeping out an 18-foot head of water so the work inside could con-

tinue. Jim was so concerned about the dike that he kept a constant watch day and night to detect and arrest the slightest leak.

Out of 60 days in the middle of winter, Jim slept only 8 nights at home. The rest of the nights he spent in a sleeping bag on the island beside the dam, where he could personally watch it. The job was completed without major incident, on schedule, and at a profit to Jim and his company.

Uses Safety Program

Despite his preference for the difficult and unusual job, Jim never disregards safety. Through long experience with U. S. Army Corps of Engineers projects, he has seen the advantages of conducting adequate safety programs on all jobs. He is so convinced of the necessity for a safety program that he carries an intensive campaign for safe working conditions onto every job.

His theory is that safety pays, not only in reduced insurance premiums and reduction of lost time, but also—and primarily—in improved morale among workmen who know that their supervisors are vitally interested in the safety and welfare of each employee.

Jim runs a good job. The workmen like him, and they like the way his jobs are conducted. His full-time active participation in each job he undertakes indicates his interest in the work. In Edina, a Minneapolis suburb, where he and his family live, Jim and Marion are respected as good citizens. In spite of his busy work schedule, Jim finds time to be advancement chairman of the troop committee of Boy Scout Troop 87. Marion is a member of the Edina School Board. They take pride in their beautiful home and in their growing community.

Jim plays an occasional game of golf and likes to hunt ducks. With their two Boy Scouts, now 13 and 15 years of age, Jim and Marion enjoy many outdoor experiences, from picnicking in their back yard to duck-hunting trips on the Minnesota lakes. Jim deeply enjoys his home and family, but really seems happiest when he is up to his ears in a tough construction problem. **THE END**

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Before you bid another soil compaction job, find out more about the Buffalo-Springfield Kompactor. It may completely change your time and cost picture, give you a clear-cut advantage in bidding those close jobs!

Write today for full information.

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Book on World's Bridges

A survey of the greatest bridges of the world, from early historical times to the present day, is contained in "The World's Great Bridges", a new book published by Harper & Bros., New York, N. Y.

Illustrated with 43 photographs and 24 line drawings, the book traces man's achievement in the art of bridge building from the primitive wood and stone structures of ancient China and Rome to the gigantic suspension spans of today.

Sections are devoted to the dangers and difficulties encountered in overcoming natural obstacles; the mysterious "caisson disease" which attacked the first men to work in compressed air chambers below water level; and such engineering defeats as the Quebec and Tacoma Narrows Bridge disasters.

"The World's Great Bridges" is written by H. Shirley Smith. It is priced at \$3.50, and may be ordered from Harper & Bros., 49 E. 33rd St., New York 16, N. Y.

CONVENTION CALENDAR

September 13-15 National Highway Conference

Second Annual National Highway Conference of County Engineers and Officials, sponsored by the County and Local Roads Division of the American Road Builders' Association, Deshler-Hilton Hotel, Columbus, Ohio. B. F. Ostergren, managing director, County and Local Roads Division, ARBA, World Center Bldg., Washington 6, D. C.

September 16-17 American Society of Photogrammetry

Semi-annual Meeting, American Society of Photogrammetry, in conjunction with the First International Instrument Congress and Exposition, Commercial Museum and Convention Hall, Philadelphia, Pa. Sumter B. Triah, chairman, ASP, 1000 11th St., Washington 1, D. C.

September 16-18 Western Assn. of State Highway Officials

Meeting, Western Association of State Highway Officials, Sun Valley Lodge, Sun Valley, Idaho. Earle V. Miller, state highway engineer, Boise, Idaho.

September 19-22 American Public Works Assn.

American Public Works Association, 1954 Public Works Congress and Equipment Show, Hotel Claridge, Atlantic City, N. J. D. F. Herrick, executive director, APWA, 1313 E. 60th St., Chicago 37, Ill.

September 28-30 Southeastern Assn. of State Highway Officials

Meeting, Southeastern Association of State Highway Officials, Andrew Jackson Hotel, Nashville, Tenn. Berrien W. Davis, secretary-treasurer, SASHO, State Highway and Public Works Commission, Raleigh, N. C.

October 5-8 Ohio Short Course on Roadside Development

Ohio Short Course on Roadside Development, Deshler-Hilton Hotel, Columbus, Ohio. Wilbur J. Garmhausen, chief landscape architect, State Highway Department, Columbus 15, Ohio.

October 6-8 Virginia Highway Conference

Virginia Highway Conference, Virginia Military Institute, Lexington, Va. R. P. Ellison, executive assistant, Department of Highways, Richmond, Va.

October 14-15 Diesel Operators' Conference

Diesel Operators' Conference, Student Union, University of Nebraska, Lincoln. Nebr. Robert A. Ratner, supervisor of institutes, 101 Architectural Hall, University of Nebraska, Lincoln, Nebr.

October 18-22 American Society of Civil Engineers

Annual Convention, American Society of Civil Engineers, Hotel Statler, New York, N. Y. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York, N. Y.

October 18-22 National Safety Congress and Exposition

Forty-second Annual National Safety Congress and Exposition, Hotels Hilton, Congress, Palmer House, Morrison, and LaSalle. G. E. Burns, congress manager, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 25-27 American Concrete Pipe Association

Fourth Annual Short Course of Instruction of the American Concrete Pipe Association, Hotel Statler, St. Louis, Mo. Howard F. Peckworth, managing director, ACPA, 228 N. LaSalle St., Chicago, Ill.

October 25-27 National Lubricating Grease Association

Meeting, National Lubricating Grease Institute, Mark Hopkins Hotel, San Francisco, Calif. Harry F. Bennetts, executive secretary, NLGI, 4638 J. C. Nichols Parkway, Kansas City, Mo.

October 25-28 American Institute of Steel Construction

Meeting, American Institute of Steel Construction, Greenbrier Hotel, White Sulphur Springs, W. Va. L. Abbott Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

SEPTEMBER, 1954

October 28-29 American Concrete Institute

Seventh Regional Meeting, American Concrete Institute, Hotel Statler, Los Angeles, Calif. William A. Maples, secretary-treasurer, 18263 W. McNichols Road, Detroit 19, Mich.

November 9-11 American Assn. of State Highway Officials

Meeting, American Association of State Highway Officials, Olympic Hotel, Seattle, Wash. Hal H. Hale, executive secretary, AASHO, 917 National Press Bldg., Washington 4, D. C.

November 29 Bituminous Concrete Producers Assn.

Convention, New York State Bituminous Concrete Producers Association, Hotel Stat-

ler, Buffalo, N. Y. Gus Rayner, executive secretary, Box 667, Albany, N. Y.

Power Transmission Units And Conveyor Components

A new catalog on its line of conveyor and power transmission products is available from the Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

The line of enclosed gear drives shown includes parallel-shaft helical drives, as well as herringbone, worm, and Electrofluid drives. The P. I. V. variable-speed-drive grouping includes 20 to 25-hp H6 units with input and output gears.

Transmission products illustrated are ball and roller bearings, with listings of the new JPS light-duty ball bearings and the LPK mill-type roller bearings for the heaviest applications. Also covered are habbitted bearings, pulleys, gears, clutches, and couplings.

The section on conveyor components gives a list of standard products for screw conveyors, belt conveyors, Flexmount oscillating conveyors, and bucket elevators.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 321.



Charles Brongo, one of the owners, finds D Tournapulls' 12'8" turn radius and instant electric controls especially useful in close quarters. He says, "There's not much work involved in operating the D Tournapull. With the short turn, it's easy to get around homes where other rigs can't go. And Tournapulls are easy to drive from job-to-job."

50 subdivisions leveled yearly with two 7-yd. scrapers...

With 50 to 60 subdivision and other leveling jobs to do per year, Lyell Construction Company of Spencerport, New York, needs highly-productive, highly-mobile dirt-moving equipment. Their 2 D Tournapulls fill the bill. The light weight, rubber tires, and narrow width of these machines allow them to drive through traffic job-to-job. They self-load easily . . . yet have ample capacity (7 yards) to work profitably in pusher fleets. They operate together or independently, as needed.

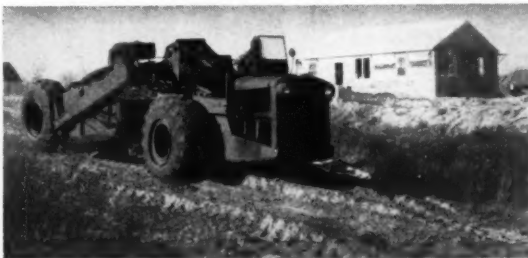
For example, when photos were taken, one "D" was grading for a housing project on Chestnut Ridge Drive in suburban Rochester. Here, it self-loaded down a 7% to 10% grade for 100 to 150 feet, then hauled 4 1/2-yard loads of sand across a road to fill low-lying lots. Complete 2000' cycles took 3.1 minutes, including 48 seconds

for self-loading. About 17 loads (76 pay yards) were delivered by the one unit in a 55-minute hour.

Meanwhile, the other Tournapull was working on a similar housing development in Greece, near Rochester, where it leveled areas around new homes for the Barmont Construction Company. Working in second gear, rig self-loaded 5 yards of sand in approximately 200 feet. Time: 1.2 minutes. Despite rough haul roads, 2100' cycles took an average of only 3.7 minutes. Unit output was about 15 loads (75 pay yards) per 55-minute hour.

You, too, will find Tournapulls profitable on small scattered jobs as well as production dirtmoving. Write us for more job-proved facts and figures covering work like yours. If you would like to see electric-control Tournapulls in action, we'll be glad to arrange a demonstration.

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Operator N. M. Rhoads says, "D Roadster self-loads well. It's easy to operate."



In 2,265 hours of use, this D Tournapull has been 92% mechanically efficient.



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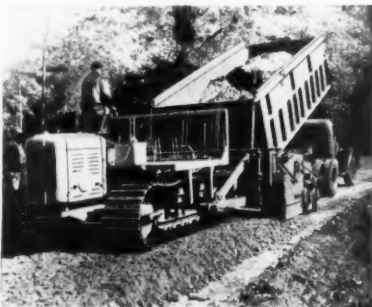


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Big capacity Base Pavers, with plenty of traction and power, handle stone, slag, gravel, soil cement or road-mix aggregates to spread accurate base course with no segregation of material. Two sizes meet every requirement for fast, low-cost operation. Write for Bulletins 2457 and 2459.



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A 2-line inquiry will bring you the facts you want about the huge construction market.

Contractors and Engineers
Magazine of Modern Construction

470 Fourth Ave., New York, N. Y.



This picture shows the construction of the tank wall forms. Form panels consist of 2 x 4 frames covered with ¾-inch plywood, which is coated with Formfilm to permit reuse many times. Superior form ties hold the wall forms together.

C&E Staff Photos

Coated Forms Re-Used In Constructing Water Tanks

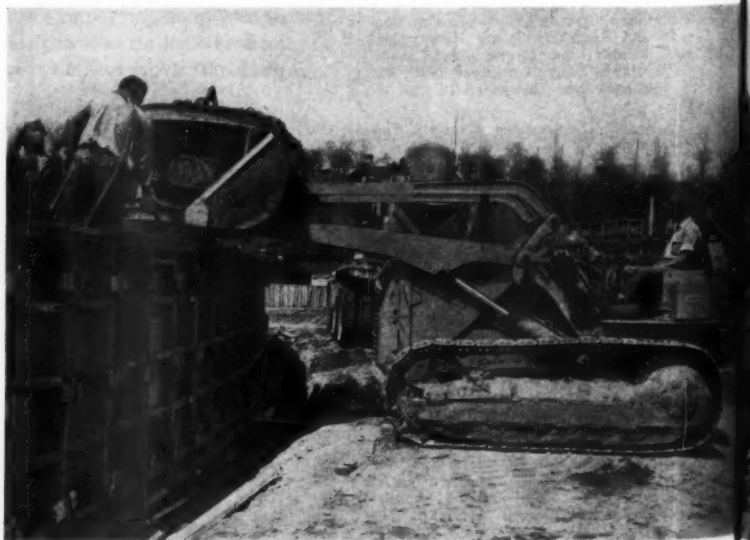
AFTER NEARLY Two years of progress on a five-year enlargement and renovation program, the Kansas City, Mo., Water Department has more than \$5 million worth of work completed or presently under contract. To date more than 30 contractors have participated in the program, which is aimed at nearly doubling the 1951 capacity of the city's water purification plant. Bond issues totaling \$19,750,000 have been approved by the voters of the city for financing the program.

One phase of the plan which already has increased the plant capacity is the construction of two new primary settling basins which are tied in with the existing plant. This project was completed during the past summer. Another major project presently under construction is a

new intake and river pumping station, which is expected to be ready for operation by February, 1955. Other units not yet under contract include additions to the final settling basins and filter plant and a new 10,000,000-gallon clearwell.

The new primary settling tanks consist of two circular Dorr clarifiers 200 feet in diameter and 20 feet deep. The big tanks with their conical bottoms are constructed of reinforced-concrete and are open at the top. The sludge-collection mechanism is installed so as to operate under water, thus making it possible to operate the clarifiers during cold winter months when ice forms on the surface of the water. General contractor for construction of the tanks and installation of the equipment was Inter State Construction

Concrete from the transit mixer in the background is poured from a ¾-yard concrete bucket carried in the bucket of the Caterpillar-mounted Traxcavator. With the inside of the tank wall form braced, the outside is supported by Superior form ties.





A worker nails a Labyrinth rubber waterstop to the bulkhead at a construction joint in the collection gallery wall. Special duplex nails used to fasten the waterstop in this operation pull out when the forms are stripped, leaving the waterstop anchored to concrete.

Plywood structures prove versatile as twin 200-foot-diameter concrete clarifiers are built at city plant

Corp., Kansas City, Mo. Clarifier equipment, valves, and venturi meters were furnished under separate contracts by The Dorr Co., Inc., Stamford, Conn.; Henry Pratt Co., Chicago, Ill.; and Builders-Providence, Inc., Providence, R. I., respectively. Plans for this project were prepared by Burns & McDonnell Engineering Co., Kansas City, Mo., which also supervised construction.

Although some excavation was

required in the footings for the center structures which carry the clarifier machinery, the main wall footings of the tanks were constructed on a fill which averaged about three feet deep. After this fill was completed and fully compacted, Raymond concrete piles for the footings were driven by Raymond Concrete Pile Co., New York, N. Y., under a subcontract. For each of the tank wall footings 76 piles were driven

(Continued on next page)



A 40-foot length of 66-inch pipe is lowered into a trench by a Lorain Crane. The crawlers of the crane are equipped with exceptionally wide treads to give the machine added stability for heavy loads. Pipe joints are electrically welded after assembly in the trench.

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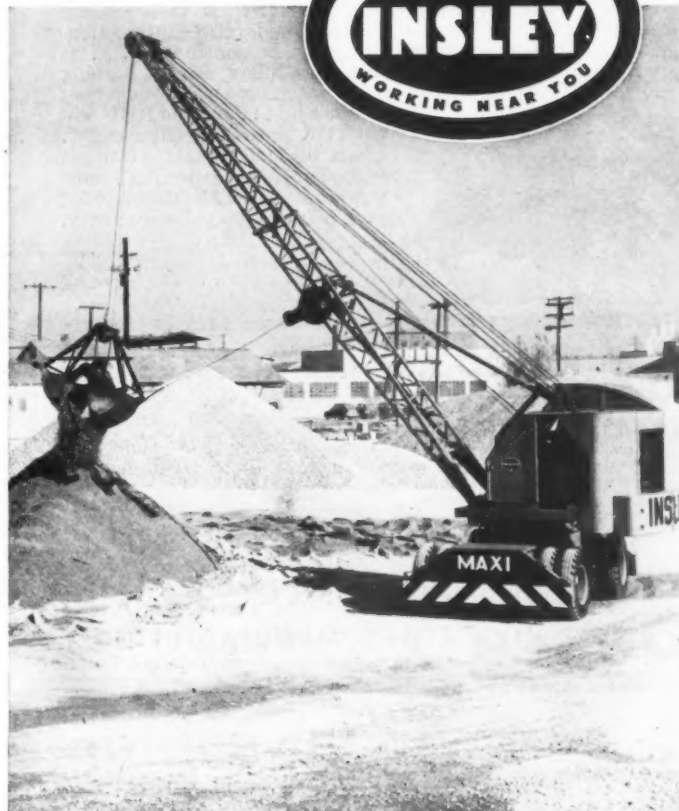
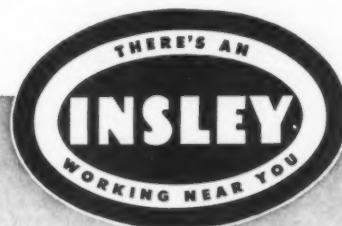
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For additional information about Insley Carrier Mounted equipment write Insley Manufacturing Corp. Indianapolis 6, Indiana

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PICTURE OF A CONTRACTOR... **MAKING MONEY!**

with a **ROSCO**

That's a photo of Francis Willette of the Willette Excavating Co. blacktopping the 8300 sq. yd. parking lot of the Dunwoody Institute in Minneapolis. His Rosco MODEL RHU MAINTENANCE DISTRIBUTOR is making money on every job. Quick to start and get going, the RHU is designed for economical bituminous maintenance and limited construction. It has many of the features required by contractors... as well as municipalities. For driveways, alleys, streets, parking lots, shoulders, re-shaping curves, patching, sealing and a host of other jobs... Model RHU will get YOU "into the profit picture". Check the money-making features with your Rosco dealer. He'll show you what Model RHU can do for you. 800 to 1000 gallon capacity.



2-Wheel Model RMT Maintenance Unit with front mounted heaters and rear mounted pump and engine is available in 400, 500 or 600 gallon sizes.

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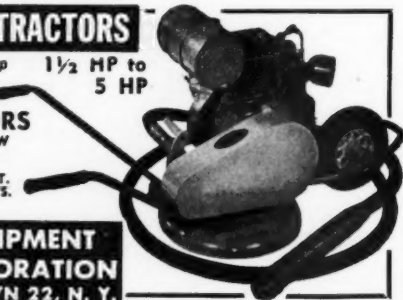
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(Continued from preceding page)

in two concentric circles of 199 and 201-foot diameter. A cluster of eight piles supports each of the center structures. The piles, varying from 53 to 121 feet in length, were driven by a Raymond crawler rig.

Although much of the work was carried on at elevations below higher river level, there was no high water during the construction of the tanks, and relatively little dewatering was necessary. Stang wellpoint systems were installed to dry up the excavations for the center structures. Less than 100 points were needed to dry up these areas sufficiently to permit hand excavation of the footings. Trenches for some of the pipelines were below ground-water level, but water in these excavations was controlled by sump pumping.

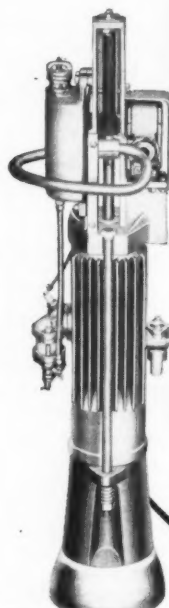
The cross section of the footing for the tank walls was 7 feet wide and 3 feet deep, and contained 80 one-inch-round reinforcing bars. These bars were distributed through the section in four layers. The bottom layer was supported on precast concrete blocks and succeeding layers were separated by continuous high chairs. The 54-inch inlet pipe which delivers the raw water to the center of the structure passes under the wall footing. This pipe had to be placed before the wall footing or the base for the center structure could be constructed.

Coated Plywood Forms

Tank walls are 20 feet high and 18 inches thick. One-eighth of the circumference of the tank wall was poured as a unit with Labyrinth rubber waterstops placed in the

For the **LOW BID** on any job,
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BARCO *Gasoline* **RAMMER**



BETTER BUILDING CONSTRUCTION!
This job called for high degree compaction. The Barco Rammer did it at the rate of 1 to 1 1/2 square yards per minute with 12" to 20" lifts and handled from 160 to 240 cu. yds. per 8 hour day.



CUTS TRENCH COSTS! Using lifts up to 24", this Rammer finished backfill in 18" trench at a rate of 360 to 600 feet per hour for quick completion of job and no cost for additional backfill.

SOIL COMPACTION is here to stay! Specified Compaction is now accepted practice on all modern construction projects. The **BARCO RAMMER** gives you specified compaction on these jobs at very little extra cost. Time after time, it has been proven that no other type of equipment can match **BARCO PERFORMANCE**:

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- Ideal for work in restricted areas: inside buildings, close to walls, culverts, and abutments—in trenches, ditches.
- Faster compaction! 20 to 30 cu. yds. per hour—day in and day out.
- One man operation! Completely self contained; no auxiliaries needed.
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- **SAFE!** Simple to operate. Operators like Barco Rammers.



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CONTRACTORS AND ENGINEERS

construction joints between the sections. Tank walls were formed with plywood form panels 2 feet wide and 20 feet long. The $\frac{3}{4}$ -inch plywood facing of the panels was backed up with a framework of 2x4 lumber. The face of the panels was coated with A. C. Horn's Formfilm plastic form coating. This material provided exceptionally good protection, and even after the form panels were used eight or more times, the surface of the plywood was smooth and in excellent condition.

Form panels were constructed so that the plywood face overlapped the 2x4 framework by about one-eighth of an inch on all sides. Notches were cut in this overlap of the plywood at the proper locations to receive the Superior form ties which held the inner and outer forms together. When two form panels were butted together this left about a quarter of an inch of space between the adjacent 2x4 studs.

Panels for the inside form were set upright on the footing and braced from the inside. Form ties were placed in the notches provided and were held in place by small nails driven into the form studs and bent over the ties. The next form section was then butted against the previous one, and the two were held in place temporarily by a few duplex nails driven through the abutting studs.

After the inside forms for a section had been set and braced, the outside form was assembled in a similar manner. The outside form, however, required no bracing and was simply held to the inner form by the ties. The ties passed through pieces of 2x4 about a foot long which served as cleats or washers to span across the abutting studs of two adjacent form panels. Wedge-type tighteners drew the forms snugly and accurately into alignment.

Placing Concrete

Ready-mix concrete was delivered to the job in truck mixers by Concrete Materials, Inc., Kansas City, Kans. In some of the footings and other low pours, the mix was spouted directly from the mixers to the forms. Where this could not be done, a $\frac{3}{4}$ -yard bottom-dump bucket was used to hoist the concrete to the forms. On lifts which were within the range of a tractor-loader, the bucket was placed in the bucket of a Traxcavator high-lift loader mounted on a Caterpillar D4 tractor. The bucket was securely chained in place in such a way that it projected out of the Traxcavator bucket enough to permit free discharge from the gates directly into the forms.

The tractor set the bucket under the chute of the ready-mix truck to load the concrete. Then it hoisted the load to the forms and held it rigidly there as the concrete was being dumped. The tractor operator could position the bucket accurately with the aid of hand signals, and there was no tendency for the bucket to swing as it would if it were hanging from a crane. Where the tractor-loader could not reach the forms, the concrete was placed with the same bucket handled by the Lorain TL-25 crane.

Concrete was thoroughly compacted in the forms with the aid of a Maginniss Hi-lectric vibrator powered by a Hi-lectric generator. Since

most of the concrete was placed in cool weather, curing was not much of a problem. Water sprays were used when necessary.

Included in the concrete work were the two flumes which carry the treated water from the clarifiers to flocculation basins. Approximately 175 feet of single flume 6 feet wide and 5 feet high lead from the clarifiers to a junction point, from which the flume continues as a double-barrel structure for another 270 feet. Parts of these flumes are open on top and parts are covered. The covered sections are very similar to box culverts, since roads and railroads pass over them.

The entire contract called for the placing of 5,500 cubic yards of concrete in which more than 400 tons of reinforcing steel were incorporated.

Forms Are Re-used

One section of the footing and wall was left out to provide access to the interior of the tank for equipment used to assemble the clarifier mechanism. After this equipment was assembled, the final section of the tank wall was poured. Form panels were then cut down to form the walls of the collection gallery which surrounds the top of the tank. The panels were each cut into three pieces for use in forming the 6-foot walls of the collection gallery. Construction of this wall form was similar to the tank wall form.

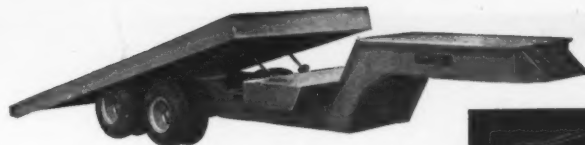
For the 18-inch tank wall sections, a $\frac{5}{8}$ -inch Labyrinth waterstop was built into the vertical construction joints as the tank sections were cast. The same type of waterstop was used in the collection gallery wall, except that in this 8-inch wall the waterstop was just $\frac{3}{4}$ inches wide. This rubber waterstop was nailed to the bulkhead with special duplex nails on which the first head was about half an inch from the point. About an inch of shank separated the heads. These nails were driven through the edge of the waterstop into the bulkhead, leaving one head and about an inch of shank to be imbedded in the concrete of the pour. This provided a secure anchorage for the waterstop when the bulkhead was removed and the next section of concrete placed.

Setting Clarifier Equipment

Equipment for the Dorr 200 x 20-foot SS Torq clarifiers was received by rail on a siding adjacent to the construction site. The heavy pieces of equipment were loaded on large truck trailers for delivery to the center structure inside the tanks. Here the Lorain TL-25 crane, assisted by a rented truck crane, picked the equipment off of the trucks and set it in place. Clarifier equipment weighed approximately 70 tons. The same trucks and cranes unloaded and transported the sections of 54 to 66-inch steel pipe which were installed as part of this contract.

Two lines of 60-inch pipe were laid to connect the existing intake lines from the old river pumping station with a new 78-inch intake line from the new station. From the junction of the 60 and 78-inch pipes, a 66-inch line was run to the two new settling tanks, with 54-inch lines feeding into each of the tanks. These several runs totaled more than 1,500 feet of the large steel pipe. The

(Concluded on next page)



MODEL GPX-D — Tandem axle. Drop or flat deck. Cap. 16 through 35 tons.



MODEL PS — Single axle, spring mounted platform or foot.



MODEL SP—Jack over axle

YOU'LL SAVE TIME AND EQUIPMENT . . . with A "TRANSPORT TRAILER"

14 thru 22-ton capacities . . .

Gooseneck type tilting platform cargo carrier equipped with two double-acting hydraulic cylinders cushion trailer platform when tilted, with or without load. Saves time—saves equipment — one man operation. Exclusive "TRANSPORT" tandem axle assembly gives both lengthwise and crosswise oscillation.

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Single or dual axle "TRANSPORT" front dollies convert semis to full trailers easily and quickly.

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but also significant

Loads like this have to be handled infrequently but when they are encountered they can't be permitted to stop operations.

If it's an Owen Bucket you can handle such unusual, especially difficult loads without fear of damage to the bucket.

Long experience has taught Owen Engineers where to build in the extra strength in additional material or special steel to withstand the abuse to which all buckets are subjected occasionally. That's why they render service for uncommonly long periods with remarkably low repair and maintenance expense.



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6030 Breakwater Ave., Cleveland 2, Ohio

BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA



Here a worker on the Kansas City settling tank project drinks from a paper cup which he has just filled from the Igloo insulated water can.

(Continued from preceding page)

pipe was received in 40-foot-long sections which were welded together after being assembled in the trench.

Most of the pipe was protected with a bituminous enamel coating, although a few sections were encased in concrete.

The two 60-inch lines and a 30-

inch sewer were carried under a railroad track. As the track was in daily use, it was necessary to tunnel through for the three pipes. Under a subcontract, Armco Drainage & Metal Products, Inc., Middletown, Ohio, installed three sleeves under the railroad by the tunnel method. After the water mains and sewer were installed in these sleeves, the remaining space was grouted.

Earth Fill

Compacted earth fill was placed around the outsides of the tanks up to approximately the top of the main tank walls. This part of the work was sublet to Miller Bros., Kansas City, Kans., grading contractor. A light clay material was obtained from a borrow pit located about half a mile from the project and accessible over existing roads. With two Caterpillar DW10 tractors pulling Cat No. 10 scrapers, two D Tournapulls, and one C Tournapull, Miller's crews loaded, hauled, and placed the 80,000 cubic yards of fill around the tanks. Scrapers were push-loaded in the borrow pit by a Caterpillar D7 tractor. On the fills, an American double-drum sheepsfoot pulled by a Caterpillar D7 tractor assisted the rubber-tired equipment in obtaining the required 90 per cent density. A Caterpillar No. 112 motor grader shaped the fills and maintained the haul roads.

The borrow pit was located at the top of a steep hill adjacent to the plant site. The upgrade portion of the haul cycle was made with empty scrapers. There was little or no delay in loading at the pit; average time for the complete round trip including loading and unloading was close to 8 minutes.

After the main tank walls had been completed and cured, the fill was carried up to the level of the floor of the collection gallery around both tanks. This fill was used for bottom form for the floor of the gallery. When the gallery wall had been poured, the fill was carried up to finished grade.

Also included in the grading work were the construction of a road connecting with roads in the existing plant, and a parking lot in an area adjacent to the new clarifiers. The balance of the area was seeded to lawn grass with the exception of steep slopes, which were sodded.

Completion of the two primary clarifiers, together with other improvements which have been made around the plant, has increased the maximum capacity from slightly over 110 mgd in 1951 and 1952 to more than 150 mgd. Other improvements will boost the figure to 210 mgd before the summer of 1956. Work on the clarifiers was begun in June, 1953. Total cost of the clarifiers, including machinery and piping, was about \$1 million.

Personnel

Inter State Construction Corp. operations were in the hands of Supt. Wright Guinn. Resident engineer for Burns & McDonnell was Harold Younger. L. P. Cookingham is city manager of Kansas City; M. P. Hatcher is director of the Water Department; and J. B. Ramsey is chief engineer and superintendent of the Water Department. THE END

U. S. Rubber Appoints

A series of personnel changes has been announced by the United States Rubber Co., New York, N. Y. The former north-central division manager, Walter F. Brown, has been promoted to the position of assistant sales manager for the U. S. tire division and will have headquarters in New York.

He will be succeeded as division manager by J. A. Napier, Pittsburgh district manager. J. S. Baker, assistant Pittsburgh district manager, has been appointed district manager, while W. L. Anderson, former division promotion manager in Chicago, has been appointed district manager of the Omaha, Nebr., office. He replaces D. A. Buchanan, now in the truck-tire department.

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that Lowers Costs!**

SIMPLEX JACKS



Engineered to deliver maximum power at minimum weight, Simplex Hydraulic Jacks meet every jacking need with ease, safety and dependability. Eight models, in capacities from 3 to 100 tons, Sold only through Industrial Distributors.

Get your free guide to jack selection. Ask for Bulletin HYD. 53.

A Jack for Every Purpose

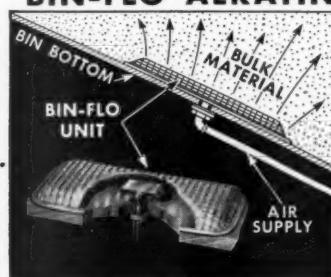
The Simplex line of jacks is complete. It includes ratchet lowering, track, screw and hydraulic jacks; self-contained and remote-controlled center-hole pullers; trench and timber braces. Buyers have known Simplex means quality in jacks for more than 50 years.



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Broadview, Illinois

BIN-FLO AERATING UNIT

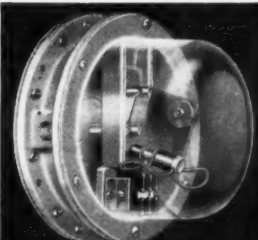


Provides Steady Flow of Dry, Finely Ground Materials which tend to bridge in storage. Uses only small amount low-pressure air.

BIN-DICATOR BIN LEVEL INDICATOR

For All Bulk Materials

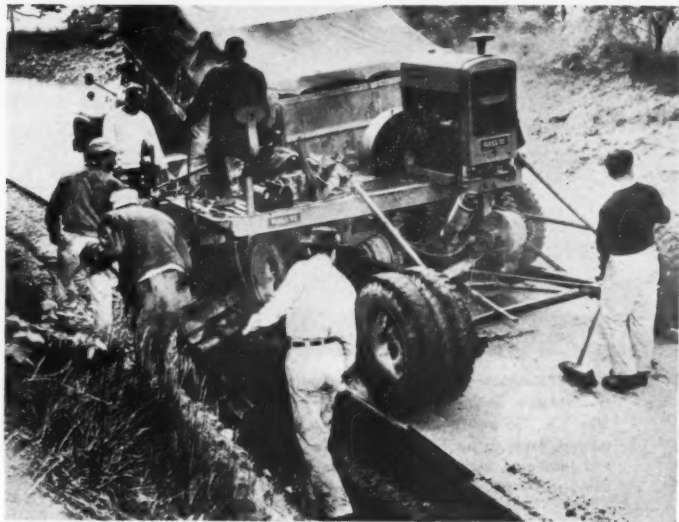
signals change in level; automatically starts and stops filling and emptying equipment.



THE BIN-DICATOR CO.
13946-M Kercheval • Detroit 15, Mich.

NEW
DETAIL DATA
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THIS BLAW-KNOX ROAD WIDENER, Model 95, formerly known as Apsco, recently laid more than 27,500 linear feet of asphaltic concrete binder, in 3 to 6-foot widths, in the course of a 9-hour working day. A little more than 583 tons of binder was used. The previous day, more than 440 tons was laid for a distance of 21,900 linear feet. The work was done on Pennsylvania State Route 31, where the 16-foot road was widened to 22-feet. Black Top Paving Co., Washington, Pa. was the contractor on the project. For further information on paving equipment made by the company, write to the Blaw-Knox Equipment Division, Blaw-Knox Co., Pittsburgh 38, Pa., or use the Request Card at page 18. Circle No. 329. ►



Portable Mortar Mixer in Compact Model



A feature of the And-wall Mix-Ter is that it can pass through narrow doorways.

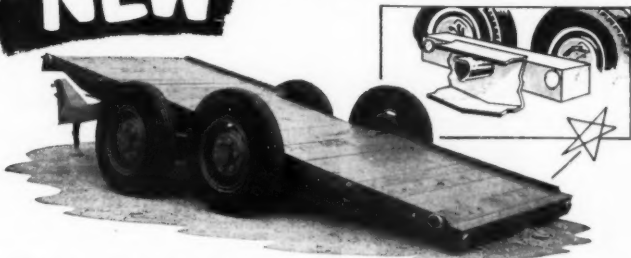
■ A 4-cubic-foot plaster and mortar mixer has been added to the line made by the Andwall Mfg. Co., Ixonia, Wis. The company also manufactures a portable tandem 2-ton roller and a spreader. The And-wall Mix-ter is built with 30-inch doorway clearance to permit one-man operation both indoors and outdoors. It is equipped with a tow bar

and pneumatic tires so that it can be moved from job to job.

The mixer also features a waist-high charging and unloading height, a bag splitter, and a protective grid for safety.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 244.

announcing... the NEW all new, tandem axle MILLER 10 Ton Tilt-Top!



A completely new, heavy duty Tilt-Top* designed and built by engineers who pioneered the development of the easier loading Tilt-Top* for hauling heavy equipment.

This new Tilt-Top is massively built from platform's rear edge to the gooseneck at the tongue. Chassis employs a heavy duty version of field proven MILLER tapered side channel design.

And this big Tilt-Top is so precisely balanced that one man can lift it effortlessly for hitching.

Big oak platform (76" x 16") handles rollers up to 10 Tons such big tractors as the D-4 and HD-5. See this NEW Tilt-Top* at your MILLER distributor today

Heavy box section walking beam gives rugged strength and independent wheel action on each side, assuring less jarring and level ride over rough terrain.

Model "BT-10" 10 ton \$2100.00* Complete with platform, four 8.25 x 20 x 12 ply tires, heavy duty electric brakes, reflectors, lights and safety chains.

* Plus freight and federal tax

MILLER
research engineers
456 S. 92nd Street, Milwaukee 14, Wis.

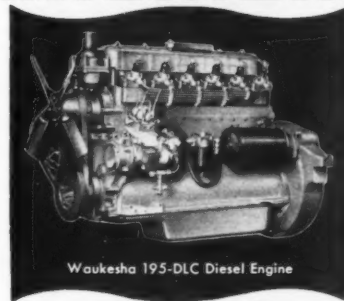


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...more yardage
...faster



Waukesha 195-DLC Diesel Engine



WAUKESHA POWER



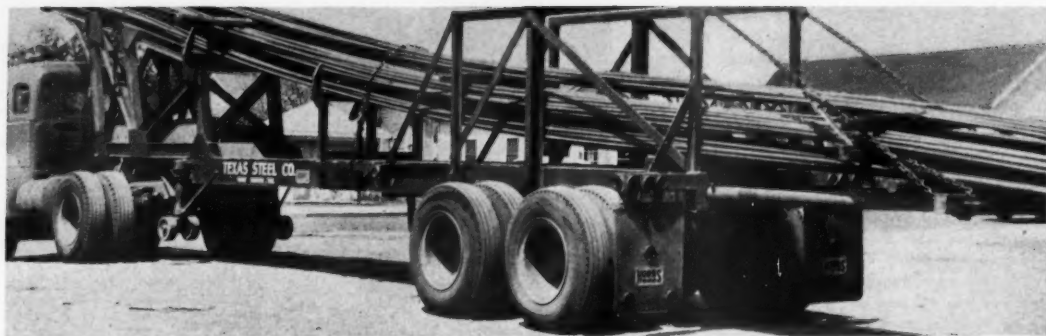
... loading compacted sand and gravel... or spotting railroad gondolas—at Custer, Wis., plant of the F. F. Mengel Co. of Wisconsin Rapids, Wis.

This 125-A Michigan 15½ cu. yd. tractor shovel has the extra power when it's needed. Because of the 195-DLC Waukesha Diesel Engine, 6-cyl., 4" bore x 4" stroke, 302 cu. in. displ.—engineered-and-built into the tractor shovel's Clark Power Train by the Clark Equipment Company, Construction Machinery Division, Benton Harbor, Mich. Get Waukesha Engine Bulletin 1624.

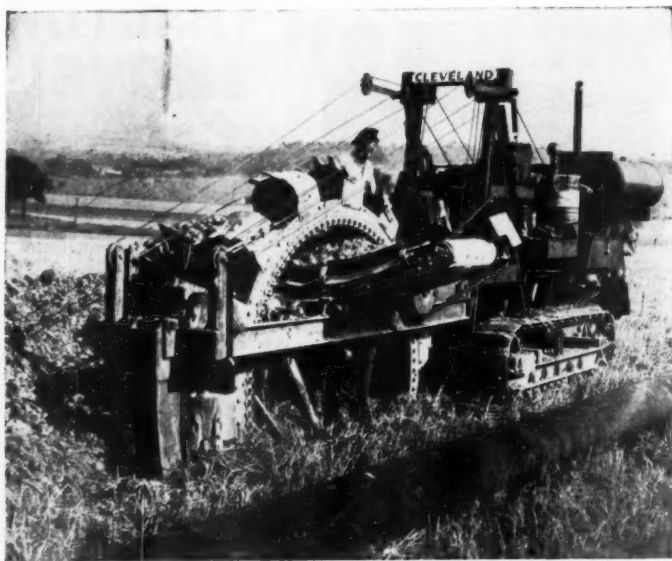
254



WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES



THIS SPECIALLY DESIGNED Hobbs trailer can haul reinforcing rods up to 60 feet long and can then travel back empty with an over-all tractor-trailer length of only 45 feet. It was recently built by the Hobbs Mfg. Co., 609-623 N. Main St., Fort Worth 1, Texas, for the Texas Steel Co. The new rig has a structural frame, situated over the fifth-wheel mounting, which slants up over the tractor-cab and helps to support payloads up to 36,000 pounds. A telescoping 12-foot rear extension pulls out to support the giant reinforcing rods during a haul and then goes back into the trailer platform above the tandem assembly when the rig is empty. For further information write to the company, or use the Request Card at page 18. Circle No. 330.



Voilà!

This is the Way to Dig!

ACROSS A ROLLING MEADOW IN FRANCE this Cleveland "110" is showing its speed and ease of operation on a pipeline job under favorable soil and weather conditions. On other projects in France, Clevelands have demonstrated their ability to turn out high production in adverse soils and terrains.

These projects comprise trenching for oil, gasoline, gas and water lines, buried cable for telephone and postal telegraph systems, airport construction and drainage systems. Repeat purchases by French owners are concrete evidence of completely satisfactory Cleveland performance.

The practical combination of proved-design features and quality construction found exclusively in Clevelands have made them standard equipment for dependable trenching performance the world over.

Write for descriptive bulletins and specifications, or get the full story on CLEVELANDS from your local distributor.



THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

CLEVELAND

Portable Arc Welder With 200-Amp Output



The 65-pound Bren-Weld arc welder has an output of 200 amps.

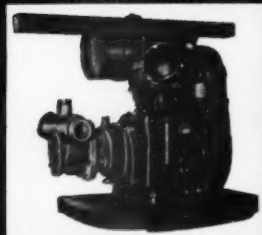
■ A new portable arc welder that operates on either 110 or 220 volts ac at 60 cycles, and has a rated output of 200 amps, weighs only 65 pounds. The Bren-Weld portable arc welder, distributed by the Kasson Die & Motor Corp., 32-14 Northern

Boulevard, Long Island City, N.Y. incorporates a new high-efficiency transformer. The welder will braze, cut, and preheat, and will weld steel up to 1½-inches thick.

The portable arc welder handles electrodes from 3/64 inch up to and including 5/32 inch, using either a metallic or carbon arc process. It is housed in a cast aluminum case, with dimensions of approximately 11 x 12 x 7½ inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 275.

WATER MAIN PRESSURE TEST PUMP PORTO PUMP A ROTARY, RUBBER GEAR PUMP FOR PRESSURE TESTING WATER MAINS and FIRE SPRINKLER INSTALLATIONS



Quickly develops required test pressure up to 200 PSI, eliminates expensive, time-consuming labor involved in hand pumping line to desired pressure—Only one man required for pump operation—Pump increases your profits and pays for itself by reducing time necessary to pressure test lines—Porto Pump excellent for jetting operations, core and exploratory drilling operations, cleaning earth moving equipment, and various other jobs requiring a portable pressure pump—Weights 95 pounds, easily carried—Simple to operate and maintain—Powered by a 4 cycle gasoline engine.

Dealers Inquiries Invited

PORTO PUMP, INCORPORATED
227 IRON STREET, DETROIT 7, MICH

New York Thruway Opens Buffalo-Rochester Link

The 57-mile section of the New York State Thruway between Rochester and Buffalo was formally opened August 26, with Governor Thomas E. Dewey officiating at the dedication ceremonies. With the opening, the total length of the Thruway now in use comes to 172 miles.

The opening of this stretch coincided with a report of revenues for the 115-mile section opened late this June. A total of \$282,851.75 was collected in regular toll revenues for the period June 24 through July 31 on the initial section opened. This amount was in addition to the \$59,800 collected from the sale of 7,475 permits to owners of passenger cars registered in the state.

During the same period, a total of 411,803 motor vehicles operated on the 115-mile section, and each vehicle averaged a trip of 44 miles.



The Galion Model 19TTE Excavator trailer dumping sticky clay and rock.

Dump Trailer for Tandem-Axle Tractors

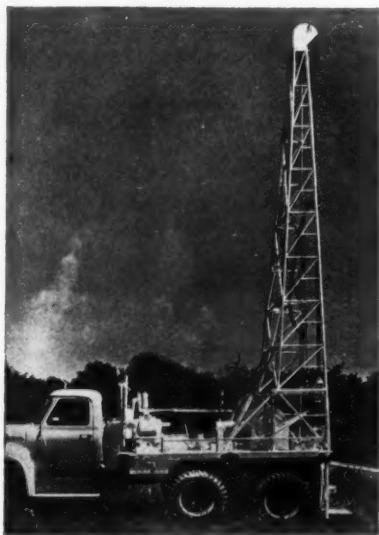
■ A new heavy-duty dump trailer for use with tandem-axle tractors in off-the-road excavation work is announced by the Galion Allsteel Body Co., Galion, Ohio. Known as the Model 19TTE excavator, the unit has a body capacity of 20 cubic yards with a payload rating of 60,000 pounds. A lifting capacity of 75,000 pounds is provided by twin 8-inch telescopic-hoist cylinders.

The trailer is built with a reinforced frame and is equipped with heavy-duty springs and axles. The body is constructed of either 8-gage high-resistance or 10-gage high-ten-

sile steel. Body features include reinforced top rolls with deflector angles that prevent shovel damage, and box-type side bracing. The laminated trailer floor consists of 1½ inches of oak under a ¼-inch wear plate.

With a 6-inch rear-to-front body taper, floor corners rounded to a 6-inch radius, barn-door-type tailgate, and a 54-degree dumping angle, a clean discharge of materials is assured.

For further information write to the company, or use the Request Card at page 18. Circle No. 298.



Standardized air clutches and torque converters are features of the Damco drill rigs.

Portable Drill Rigs Are Versatile Units

■ A new line of portable drill rigs has been introduced by the Drilling Accessory & Mfg. Co., 2006 S. Industrial Blvd., Dallas, Texas. The new rigs are designed for seismograph shot hole, blast hole, water well, or core drilling, and only minor adjustments are required for each operation. The portable rigs are offered in two sizes.

Design features include the first standardization of air clutches in the drums of portable rigs of this type. The clutches are of the double-plate air-tube type said to require little maintenance and no adjustment.

For further information write to the company, or use the Request Card at page 18. Circle No. 285.

ROAD BUILDERS — IT'S SENSATIONAL!

DRAGS **PECKERWOOD** DRAGS

STEEL SPRING WIRE ROAD BROOMS
MADE IN ANY C-O-N-T-I-N-U-O-U-S
LENGTH UP TO 12 FEET
WIDTH 6 INCHES—IT'S DIFFERENT
ASSEMBLE YOUR OWN—IN ANY SHAPE
REQUIRED—IN MINUTES, NOT HOURS

NO FRAME REQUIRED

MADE WITH KILN DRIED 6" WIDE
HARDWOOD AND HEAVY SPRING STEEL
WIRES TRIPLE OUT EACH HOLE.
NOT STAPLE SET.

THIS IS IT ORDER NOW

ILLUSTRATION OF
10-FOOT LENGTH
ONLY \$3.50

RUNNING FOOT F.O.B. KC., MO.
NOTICE! Our 15' length Unit Drag 3" wide
with the two bolts that fits your frame,
still \$2.50 ea.

SINCE **VAN BRUSH MFG. CO.** 1928
327 S. WEST BLVD., KANSAS CITY 8, MO.



Remote control that makes it possible to operate the backhoe while making a short move has improved the operating efficiency of the Bucyrus-Erie Hydrohoe.

Truck Crane and Hoe Get Remote Controls

■ Both the Bucyrus-Erie Hydro-crane and Hydrohoe, a hydraulic truck crane and a drag-shovel, respectively, are now available with remote control that permits simultaneous operation of the motor truck and the mounted equipment in first or reverse gears for short moves. Remote control also provides the advantage of power steering for accurate maneuvering in tight quarters, and it generally increases operating efficiency where frequent short

and accurate moves rather than speed are important.

Components of the control system are an air supply chamber, control valves, and actuating cylinders. Fingertip levers operate valves directing air to the actuating cylinders for the motor-truck clutch, brake, gear shift, and steering arm.

For further information write to the Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 328.

"BERG" Concrete Surfacers



A light-weight, portable, electric motor-driven Concrete Surfer consisting of the Model R2 Right Angle Head and Model AS Motor Unit.

Ideal for surfacing concrete buildings, bridges, dams, walls and many other applications.

Quickly converted into the Model V2-AS Concrete Vibrator for internal vibration by substituting the Model V2 Vibrator Unit for the above Head.

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Grader Builder No. 141. Has performed no heavy digging. Only operated approximately 500 hours to compact and control coal storage pile.
Priced low for quick sale. Contact W. C. Campbell, Old Ben Coal Corp., West Frankfort, Illinois.

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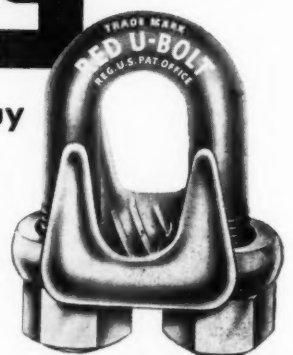
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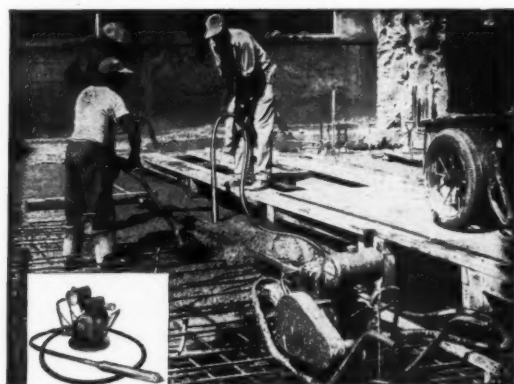


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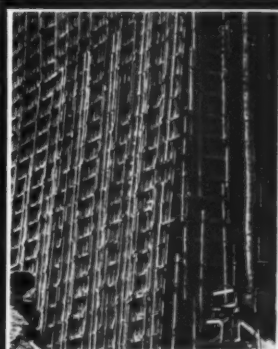
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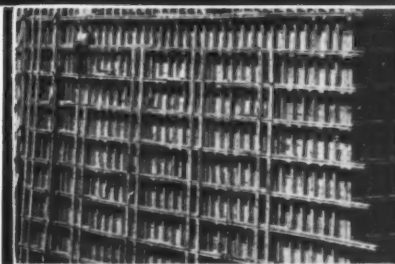


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MANUFACTURER MEMOS

Le Roi Opens Department For Municipal Sales

A municipal sales department, headed by Guy Scrivner, has been organized by Le Roi Co., Milwaukee, Wis., to serve municipalities, state and federal governing bodies, the military, and industry.

Mr. Scrivner, sales engineer in the midwest for the past two years, will be responsible for the sale of engines used chiefly to drive standby generator sets and power centrifugal

pumps. He has been with the company since 1946, serving in several capacities.

New Appointments Made At Gardner-Denver Co.

Four executive changes have been made at the Gardner-Denver Co., Quincy, Ill., manufacturer of compressors and allied equipment. Charles M. George, former sales administrator, has been made assistant to the president, G. V. Leece. J. W.

Gardner, recently elected to the company's board of directors, has been appointed administrative assistant.

The company's former director of personnel, B. P. Spann, was elected vice president at a meeting of the board of directors, and George W. Gutekunst, district manager in Los Angeles, has been transferred to the executive offices in Quincy, where he has taken up his new duties as general sales manager.

Irrgang Is Named Head Of Lincoln Electric

Members of the board of directors of The Lincoln Electric Co., Cleveland, Ohio, manufacturer of arc-welding equipment, have elected William Irrgang president and general manager of the company. He



William Irrgang, recently elected to head the Lincoln Electric Co.

succeeds James F. Lincoln, who was named chairman of the board.

John C. Lincoln, founder of the company, was elected honorary chairman of the board and treasurer. Others named to office include John S. Roscoe, executive vice president; A. F. Davis, vice president and secretary; and George Landis, vice president.

Executive vice president since 1951, Mr. Irrgang is the third president in the company's 59-year history. He has been engaged in various phases of plant operation, engineering, and management since joining Lincoln in 1929, and was director of plant engineering when the company built its new \$10 million plant in 1952.

Colorado Fuel & Iron Makes Two Promotions

John W. McAllister and Kathleen McTigue have been appointed as the new administrative assistants to the president of The Colorado Fuel & Iron Corp., New York, N. Y., manufacturer of semifinished steel, concrete-reinforcing bars, pipe, wire rope, and a number of other products used in construction.

As secretary to the president since 1950, Miss McTigue was responsible for coordinating administrative matters for executive action in the New York office. She joined the company in 1945 as an assistant secretary in the executive offices.

John W. McAllister, former executive secretary to the president has been associated with the company since 1923, when he was employed as a machinist's helper in the coal mines of southern Colorado. Transfers to the fuel and steel operating departments and to the general office of the corporation brought him to Denver, where he will continue to maintain headquarters.

Iowa Manufacturing Names Representative

Iowa Manufacturing Co., Cedar Rapids, Iowa, has appointed Carl H. Anderson as a new district representative. Previously, Mr. Anderson was in charge of the motorized head-pulley section for the manufacturer of aggregate plants, bituminous-mixing plants, and soil-compaction units.

He will have headquarters in Minneapolis, Minn., and will cover Montana, North and South Dakota, Minnesota, and the upper peninsula of Michigan in the United States, plus Alberta, Saskatchewan, Manitoba, and western Ontario in Canada.

Formwork for these columns costs less!

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FIBRE FORMS

for round columns of concrete

L. S. U. Stadium, Baton Rouge, La., Farnsworth and Chambers, Contractors and Engineers

Concrete columns supporting the decks of the Louisiana State University stadium were formed with low cost SONOTUBES.

The longest fibre forms used were 35'10" long and 22" I.D., slotted at the top to allow integration of ceiling beams with the concrete columns.

SONOTUBE Fibre Forms save time, money and labor... take fewer men to handle because they are lightweight... take less time to erect because only minimum bracing is required.

SONOTUBES are supplied in specified lengths up to 50' or can be sawed to your requirements on the job, and in 31 sizes from 1" to 36" I.D.

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Robert W. Biggs, executive vice president of S. K. Wellman Co.

Wellman Appoints Biggs

Robert W. Biggs has been appointed executive vice president of the S. K. Wellman Co., Bedford, Ohio, manufacturer of powdered-metal friction materials.

The former vice president in charge of manufacturing for Ball Brothers, Inc., Muncie, Ind., Mr. Biggs assumed his duties with Wellman last month.

Gar Wood Sales Supervisor

Reorganization of the sales and marketing functions of Gar Wood Industries, Wayne, Mich., and a subsidiary, National Lift Co., has resulted in the appointment of E. B. Hill to the post of director of sales, advertising, and export. Centralization of sales activity under Mr. Hill's direction is being done with an eye to pin-pointing sales effort in all markets and increasing customer service.

Starting with Gar Wood, manufacturer of truck equipment and construction and road-building machinery, in 1926, Mr. Hill became a vice president of the firm in 1949.

Domestic and export sales of Gar Wood, Buckeye, and Hi-Way construction equipment have been moved to the Gar Wood Industries offices in Wayne, Mich. Manufacturing operations at the Findlay, Ohio, plant, which formerly handled such sales, have not been affected by the move.

Gorman-Rupp Names Three District Representatives

Gorman-Rupp Co., Mansfield, Ohio, manufacturer of engine and motor-powered pumps, has appointed three new district representatives.

Covering the northeastern section of the United States is Richard M. Fraser. The states of West Virginia, Virginia, Ohio, Pennsylvania, New York, and parts of Kentucky will constitute the territory of Donald L. Sanders, while Ted C. Bauck will represent the company in five midwestern states.

Currie Is Appointed By American Cyanamid

American Cyanamid Co., New York, N. Y., has appointed Stewart A. Currie to head the new St. Louis office of its explosives department.

Mr. Currie has served as supervisor of blasting in mines and quarries, and on construction projects. In 1942, he was made sales representative for the Tennessee-Alabama area, and later he had the Pennsylvania area.

Hyatt Chief Engineer

Carl W. Kalchthaler has been appointed chief engineer for the Hyatt Bearings Division of General Motors Corp. at Harrison, N. J., succeeding H. Ralston Gibbons. Mr. Gibbons has been made technical assistant to the general manager.

With Hyatt since 1925, Mr. Kalchthaler was assistant manager of the Detroit office until 1953, when he was made assistant to the general sales manager, a post which he held until his present promotion.

Mr. Gibbons served with Hyatt as experimental engineer, assistant

chief engineer, and chief engineer before being promoted to his newly-created post.

Texas Co. Names Kuhn To New Research Post

Dr. Wayne E. Kuhn, who has been associated with the company since 1929, has been named general manager of the newly created research and technical department of The Texas Co., New York, N. Y.

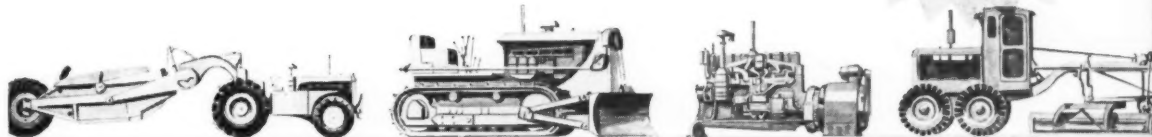
Graduated with a Ph. D in chemistry from Cornell University in 1929, Dr. Kuhn first was employed by the company at its Port Arthur,

Texas, refinery. In 1937 he was transferred to the New York headquarters, and one year later was placed in charge of the technical and research division. His latest appointment fills a new executive post created by raising of the technical and research division to departmental status.

Dr. Kuhn holds membership in several societies, including the American Chemical Society, the Society of Automotive Engineers, and the American Institute of Physics. He is also immediate past president of the Commercial Chemical Development Association.

FINISH THE JOB WITH USED EQUIPMENT— YOU CAN RELY ON A "BONDED BUY"

Only from your CATERPILLAR DEALER—
a \$10,000 guarantee on "Bonded Buy"
used Caterpillar-built equipment.
Other big values, too!



Do you need extra equipment to meet a contract or complete a job before the weather closes in? You'll find what you want, cost-wise and work-wise, at your Caterpillar Dealer, headquarters for the best buys in new and used units—tractors, engines, motor graders, scrapers and other earthmoving equipment!

For three-way value in used machines, you can't beat "Bonded Buy"! You get value at the time of the purchase, big-production value on the job and value at trade-in time. Only your Caterpillar Dealer offers you "Bonded Buy" on used Caterpillar-built units with a guarantee backed by a bond of \$10,000, issued by The Travelers Indemnity Company. He also offers you your choice of two other value classifications—"Certified Buy" and "Buy and Try" on used equipment of any make, honestly labeled and backed in writing!

Why gamble on used equipment when you can buy with assurance from your Caterpillar Dealer. Take a look through his lot today—see the values he has for you in his used equipment line-up!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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BEST BUYS IN NEW
AND USED EQUIPMENT

DIESEL ENGINES • TRACTORS
MOTOR GRADERS • EARTHMOVING EQUIPMENT

YOU KNOW WHAT YOU'RE BUYING FROM YOUR CATERPILLAR DEALER

Your Caterpillar Dealer offers three classes of used equipment, and backs each one in writing. You buy with confidence, sure that the equipment is honestly described.

(1) "BONDED BUY." Only the best in used Caterpillar Diesel Tractors, Engines, Motor Graders and Earthmoving Equipment. Each "BONDED BUY" machine is backed by a Dealer's Guarantee Bond equal to the purchase price of the unit up to a maximum of \$10,000. This provides a guarantee for thirty days against unsatisfactory performance due to defective parts. If a part should prove defective within the guarantee period under the normal conditions of your job and with proper maintenance, your dealer will put your unit back into operating condition with no charge to you for parts and labor up to the amount of the bond. The Dealer's Guarantee Bond is backed by The Travelers Indemnity Company. Your Caterpillar Dealer gives you this protection with your purchase of a "BONDED BUY" unit. Look for the "BONDED BUY" symbol—it's your assurance of the best in used machines.

(2) "CERTIFIED BUY." "Certified Buy" covers units of any make in good condition. Your performance guarantee is in writing backed by your Caterpillar Dealer.

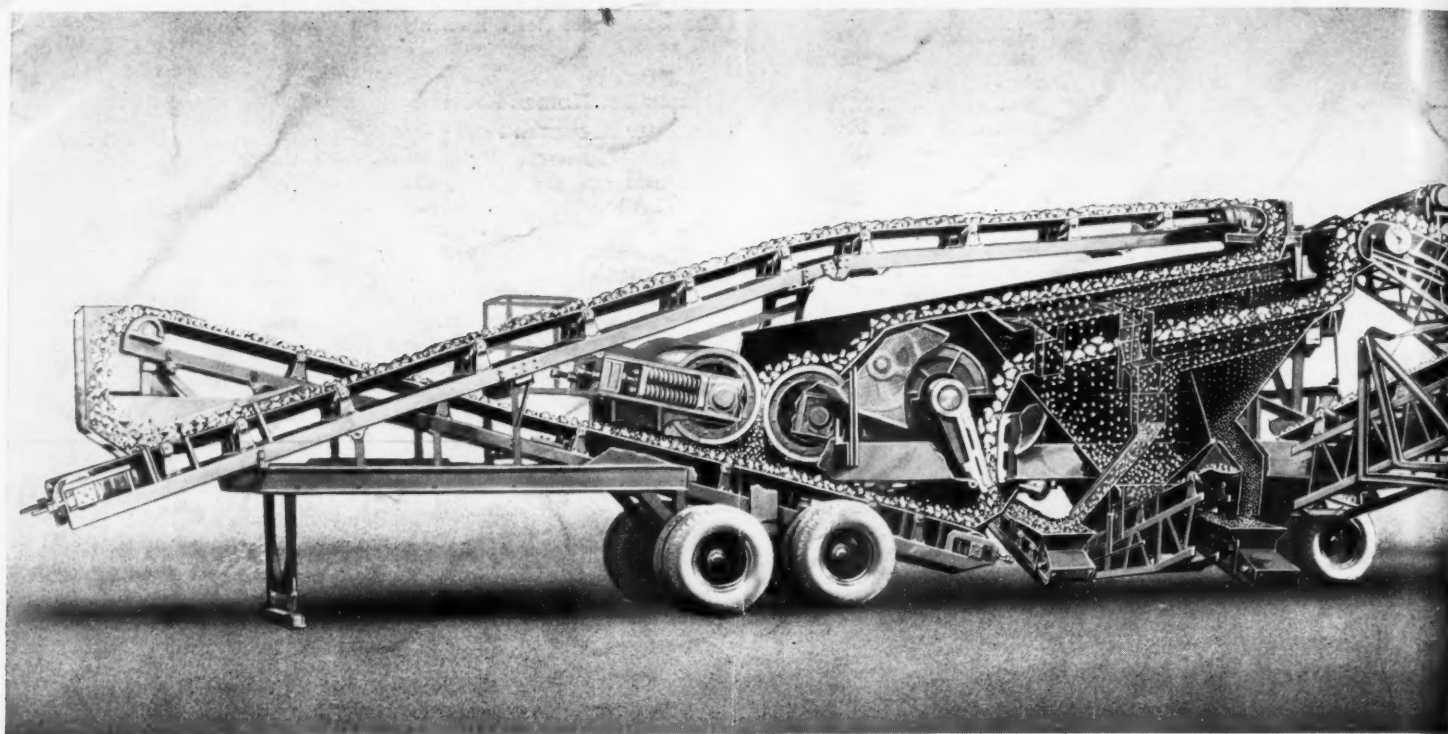
(3) "BUY AND TRY." Bargains in used machines of any make. Buy and try them for a period mutually agreed upon by you and your dealer. Each "Buy and Try" unit carries his written "money-back" agreement.

"BONDED BUY" assurance effective in the United States and Canada

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CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.
GENTLEMEN: Send me, without obligation, more information on "Bonded Buy."

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Street Address _____
City _____ Zone No. _____ State _____



Why this is the only COMPLETE AGGREGATES plant on wheels !

● There are a number of portable *crushing* plants on the market . . . several *screening* plants . . . many *crushing and screening* plants. But there is only one portable plant for the production of *complete aggregates* . . . the Bottom Deck Feed Duplex Plant by PIONEER.

No other portable plant is so completely flexible. No other plant can produce material to meet such rigid specifications.

How Bottom Deck Feed works

The Bottom Deck Feed principle is illustrated in the cut-away drawing above.

Note that pit run material goes first to the bottom deck where all specification material is immediately removed without having to pass through crushers and other screens.

Oversize is then reduced by the jaw crusher and the product fed to the top deck for screening. Specification material by-passes bottom deck, again avoiding unnecessary screening.

Oversize from top deck then goes to the roll crusher for further reduction. Material from roll crusher, discharged onto same conveyor which carries material from jaw crusher, returns to the top deck for final screening.

Accurate gradation control possible

Because crushed material is kept separate

from incoming pit material, it is possible to maintain far greater control over gradation of the final product than can be done with any other plant. At the top deck, for example, any intermediate size can be drawn off to a waste-pile, or stockpiled for future use. It is possible to produce 100% fractured chips simultaneously with the production of regular aggregates, without any auxiliary equipment.

This is why a PIONEER Bottom Deck Feed Plant is *more* than a mere crushing and screening plant . . . why it qualifies as the *only* complete aggregates producing plant on wheels.

Both crushers share work equally

Another outstanding advantage of the Bottom Deck Feed Plant is the ease with which the work load can be balanced between the primary and secondary crushers by simply adjusting the jaw setting *while the plant is in operation*. Thus, when a pocket of fine material is encountered in the pit, the jaw may be closed until each crusher is doing an equal amount of work. When the pit material is running coarse, the jaw may be opened until the crushing load is once again equalized.

This easy adjustment increases output by keeping each crusher working at full capacity.

Bottom Deck Feed Plants, built exclusively by PIONEER, are available in 7 different sizes. For further informa-

tion, write Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota (a subsidiary of Poor & Company, Chicago) or see your nearest PIONEER distributor.

SPECIFICATIONS

Model Number	Jaw Crusher	Roll Crusher	Effec. Sq. Ft. of Screening Area	Approx. Moving Wt. Less Power (lbs.)
46VE*	1036	40x22	96	65200
40V	1036	40x22	80	66850
39V	1036	30x18	80	57500
25V	1036	24x16	60	46000
24V	1024	24x16	60	42100
18V	1024	24x16	40	36700
17V	1016	24x16	40	32900

*Diesel Electric Drive



Pioneer
Continuflow EQUIPMENT

Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.

Please send information on equipment checked.

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| <input type="checkbox"/> GRAVEL PLANTS | <input type="checkbox"/> WASHING PLANTS | <input type="checkbox"/> MECHANICAL FEEDERS |
| <input type="checkbox"/> ROCK PLANTS | <input type="checkbox"/> BITUMINOUS PLANTS | <input type="checkbox"/> VIBRATING SCREENS |
| <input type="checkbox"/> JAW CRUSHERS | <input type="checkbox"/> APRON FEEDERS | <input type="checkbox"/> BUZZER SCREENS (LIGHT DUTY) |
| <input type="checkbox"/> ROLL CRUSHERS | <input type="checkbox"/> DRO FEEDERS | <input type="checkbox"/> CONTINUFLU CONVEYORS |

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